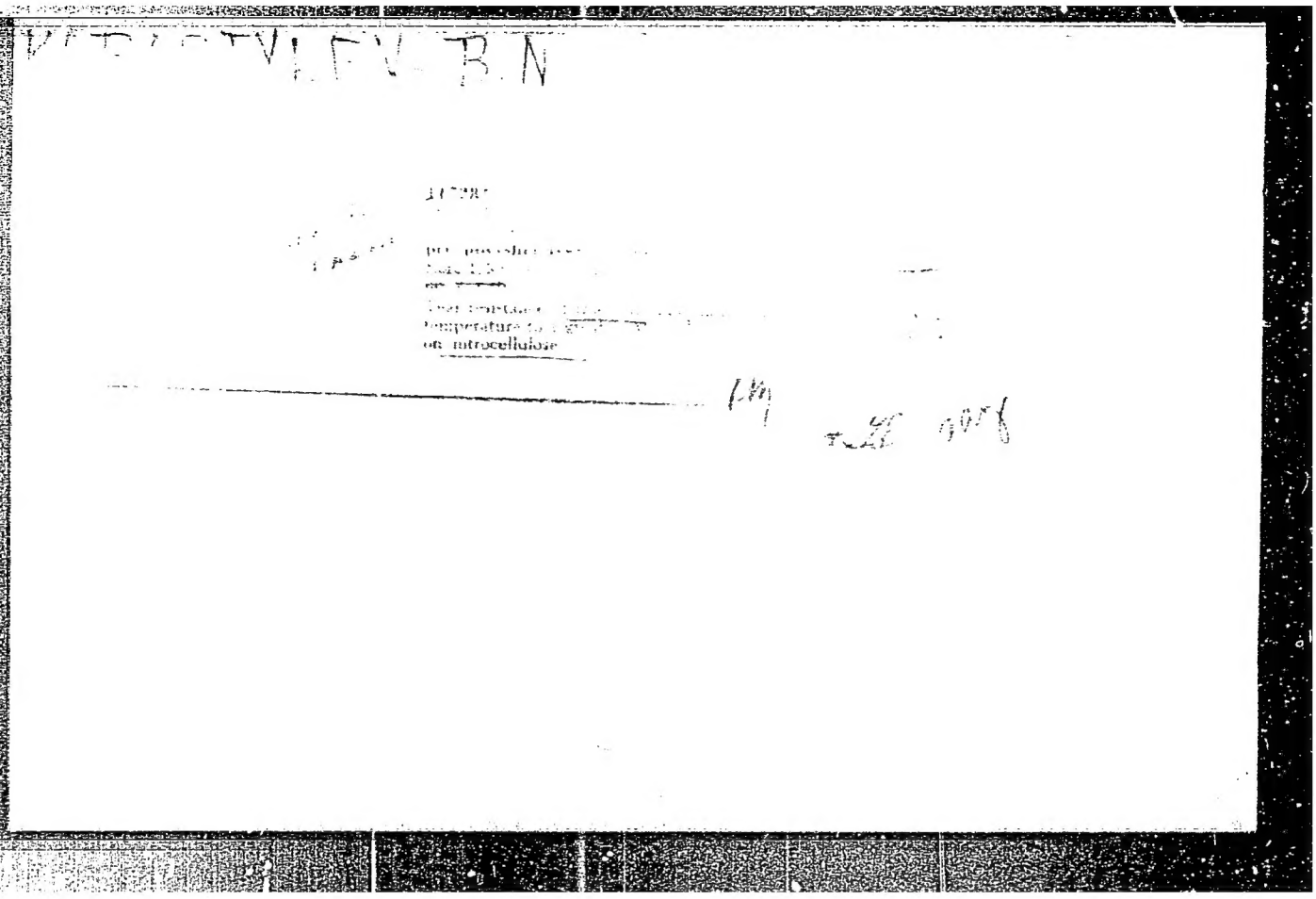
KOZLOV, P.V.; KOROSTYLEV, B.N.; BURDYGINA, G.I.

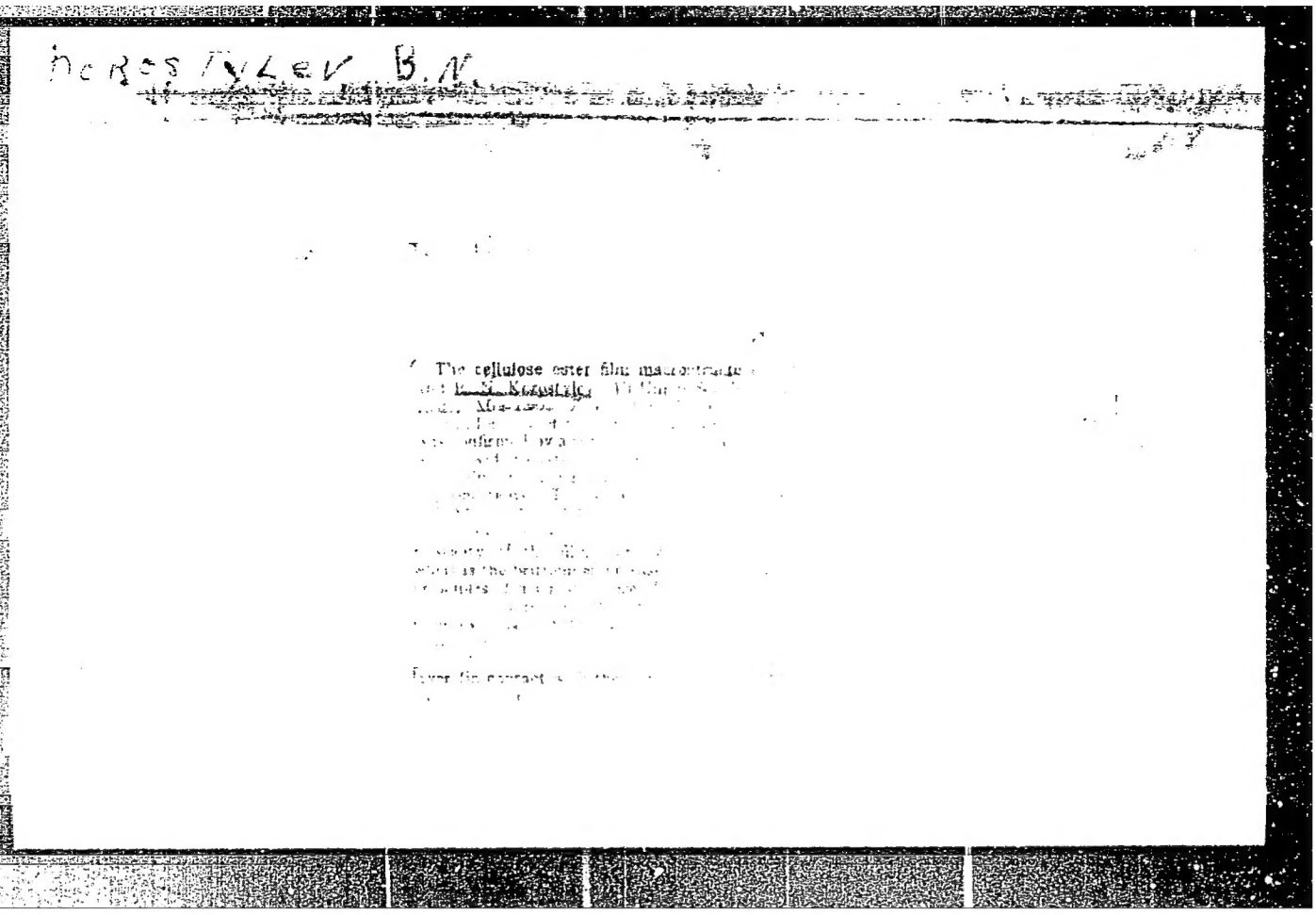
Effect of the type of solvent on the structural heterogeneity of cellulose triacetate films. Trudy LIKI no.3:248-253 '55.
(MLRA 9:8)

1. Kafedra tekhnologii proizvodstva kinofotomaterialov.
(Cinematography--Films) (Photographic chemistry)

KOROSTYLEV, B.N., kand.tekhn.nauk [translator]; SPASOKUKOTSKIY, N.S., kand. khim.nauk [translator]; KRUPENIN, L.K., kand.tekhn.nauk, [translator]; KOZLOV, P.V., doktor tekhn.nauk, red.; CHEL'TSOV, V.S., kand.khim.nauk, red.; SERDYUKOV, I.V., red.; SMIRNOVA, N.I., tekhn.red.

[Photographic materials and their processes; a collection of translations] Fotograficheskie materialy i protsessy ikh obrabotki; sbornik perevodov iz inostrannoi periodicheskoi literatury. Moskva, Izd-vo inostr. lit-ry, 1957. 319 p. (MIRA 11:5)
(Photography)





KOROSTYLEV, B.N.; KOZLOV, P.V.

Relaxation processes in cellulose ester films. Vysokom. soed. 1 no.6:793-798 Je '59. (MIRA 12:10)

1.Vsesoyuznyy nauchno-issledovatel'skiy kino-foto institut, Moskva.
(Cellulose) (Films (Chemistry))

RODIONOV, R.A.; BALIN, A.I.; KOROSTYLEV, B.N.

Synthesis of polyethylene terephthalate. Khim.volok. no.6:11-12 '61. (MIRA 14:12)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinstituta, g. Shostka.

(Terephthalic acid)

KOZLOV, Pavel Vasil'yevich, prof.; BRAGINSKIY, Gerts Irmovich, dots.;
Prinimali uchastiye: SHIFRINA, V.S.; KHARIT, Ya.A.;
KOROSTYLEV, B.N.; SOROKINA, R.A.; ZHERDETSKAYA, N.N., red.

[Chemistry and technology of polymer films] Khimiia i tekhnologiia polimernykh plenok. Moskva, Iskusstvo, 1965. 623 p.
(MIRA 18:7)

AVDEYEV, Yu.G.; VORONIN, V.S.; KOROSTYLEV, N.P.; SMIRNOV, V.G.; PUSTOVALOV, A.I.; CHEBOTYREV, B.A.; ZENKOV, B.N.; KARABACH, T.I.

Determining the efficiency of various ways of charging boreholes along the contour of a mine working. Shakht. stroi. 8 no.10: 19-21 O '64. (MIRA 17:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnoy metallurgii (for Avdeyev, Voronin, Korostylev, Smirnov).
2. Rudnik imeni XXII s"yezda Kommunisticheskoy partii Sovetskogo Soyuza Zyryanovskogo kombinata (for Pustovalov, Chebotyrev, Zenkov, Karabach).

KOROSTYLEVA, L.A.

USSR/Optics - Spectroscopy. K-6

Abs Jour : Referat Zhur - Fizika, No 3, 1957, 7808

Author : Korostyleva, L.A., Skriganov, A.R., Yashin, N.M.
Inst :
Title : Hyperfine Structure of Spectral Lines and of Spins of Nuclei U^{233} and Pu^{238}.

Orig Pub : Izv. AN SSSR, ser. fiz., 1955, 19, No 1, 31-34

Abstract : See Referat Zhur Fizika, 1956, 5367.

Card 1/1 - 75 -

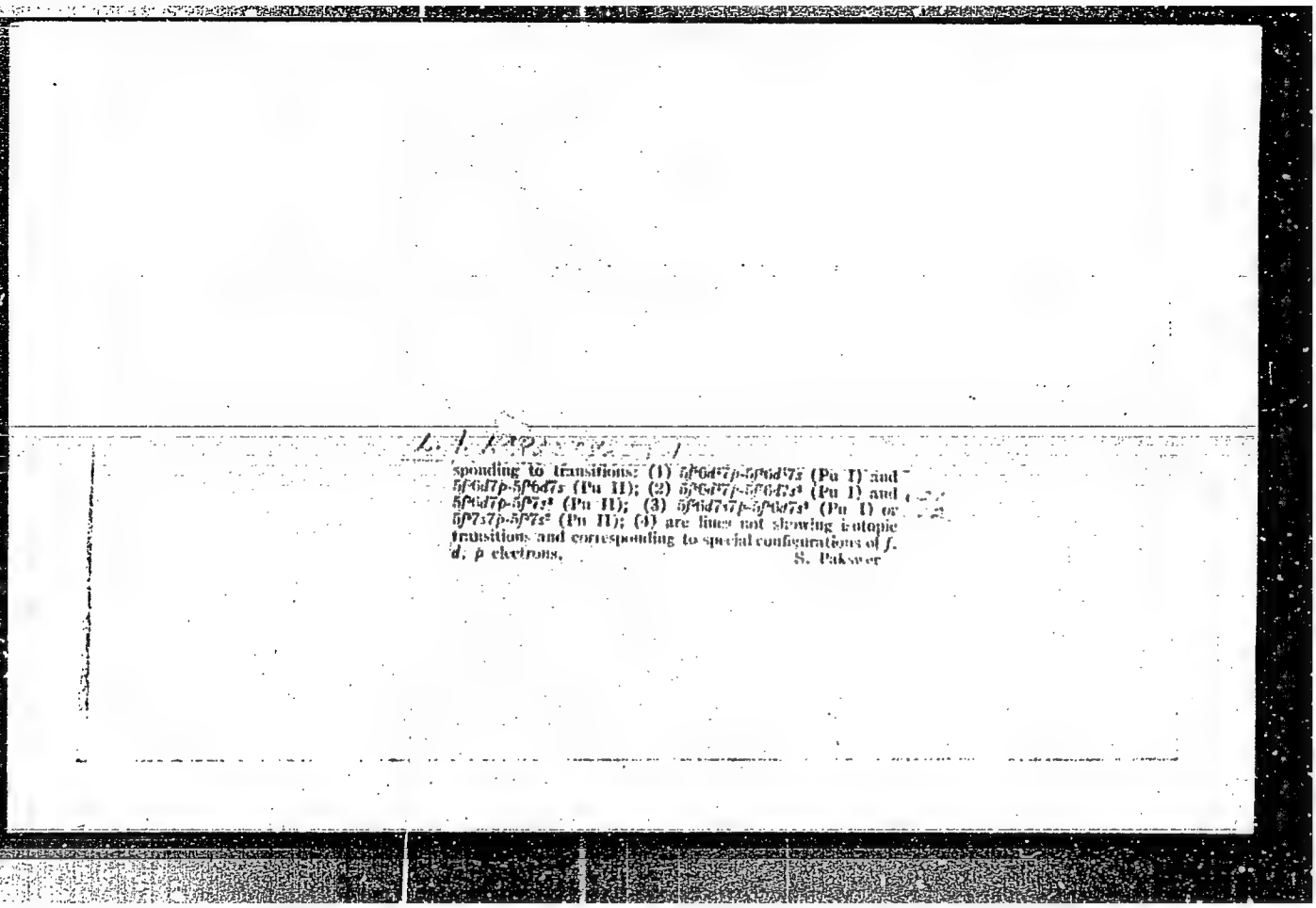
STRIGANOV,A.R.; KOROSTYLEVA,L.A.; DONTSOV,Yu.P.

Isotope shift in plutonium spectra. Izv. AN SSSR. Ser. 19 no.1: 34-35 Ja-F '55. (MLRA 8:9)
(Spectrum analysis) (Spectrometer)

Korostyleva, L. A.

USSR

Hyperfine structure of spectral lines and nuclear spins of uranium-233 and plutonium-239. L. A. Korostyleva, A. R. Striganov, and N. M. Yashin. *Zhur. Eksptl. i Teoret. Fiz.* 28, 471–6(1956).—The spectra were excited in a discharge tube with a hollow Al cathode. The tube was filled with circulating inert gas (A, Kr, He); prepns. were made of U_3O_8 and PuO_2. These are not excited, unless they are reduced to metal by at. H in the discharge (produced by applying a current of 0.3 amp. to H_2 at 2 mm. pressure for 1–5 hrs.). The measurements were made at 2 mm. A pressure, 0.3 amp. current. The plates were photographed together with Fabry-Perot standard plates for 30 min. Noticeable hyperfine structure was observed on 12 lines of U^{233} and a 6 component structure was completely measured on lines 6826.93, 5976.34, 5915.40, 4515.28, and 4171.59 A. As the hyperfine structure is composed of 6 lines, the nuclear spin of $U^{233} = 5/2$ and $I < J$. From the ratios of intervals between the components it is concluded that the U^{233} nucleus has a quadrupole moment and that its magnetic moment is 20% and 1.5 times larger than that of U^{235}. Seventy lines of Pu^{239} are split into 3 components. This can be explained by assuming the nuclear moment equal to 0.5. The width of the superfine structure is tabulated for all 70 lines; it varies from 0.04 to 0.2 cm.$^{-1}$. The data lead to the values of quantum numbers $J = 1$, $F_1 = 1/2$, $F_2 = 3/2$. Isotopic displacement in the plutonium spectrum. A. R. Striganov, L. A. Korostyleva, and Yu. P. Dontsov. *Ibid.* 480–84.—The authors introduced a mixt. of Pu^{239} and Pu^{240} oxides into their discharge tube. An isotopic displacement of 0.08–0.20 cm.$^{-1}$ was observed on 19 lines 13 of which showed purely isotopic displacement and 6 isotopic displacement and superfine structure. The lines can be classed into 4 groups corre-



sponding to transitions: (1) $5f^{6}6d^{2}7p$-$5f^{6}6d^{2}7s$ (Pu I) and $5f^{6}6d7p$-$5f^{6}6d7s$ (Pu II); (2) $5f^{6}6d^{2}7p$-$5f^{6}6d^{3}$ (Pu I) and $5f^{6}6d7p$-$5f^{6}7s^{2}$ (Pu II); (3) $5f^{6}6d7s7p$-$5f^{6}6d7s^{2}$ (Pu I) or $5f^{6}7s7p$-$5f^{6}7s^{2}$ (Pu II); (4) are lines not showing isotopic transitions and corresponding to special configurations of f, d, p electrons.

S. Paksoy

KORLSTYLEVA, L. A.

535.338.333 62

6700. Isotope shift in the spectrum of plutonium. A. R. STRIGANOV, L. A. KOROSTYLEVA AND YU. P. DONTSOV. *Zh. eksper. teor. Fiz.*, 28, No. 4, 460–4 (1955) In Russian.

USSR

A mixture of Pu^{239} and Pu^{240} is investigated with high resolving power between 4 100–6 500 Å. Nineteen lines exhibit an isotope shift; some of these, hyperfine structure. Schemes of transitions are proposed.

O. B. BROWN

КОРОСТЫЛЕВА Л.А.

USSR/Nuclear Physics - Uranium's spectrum

FD-2901

Card 1/1 Pub. 146 - 1/19

Author : Striganov, A. R.; Korostyleva, L. A.

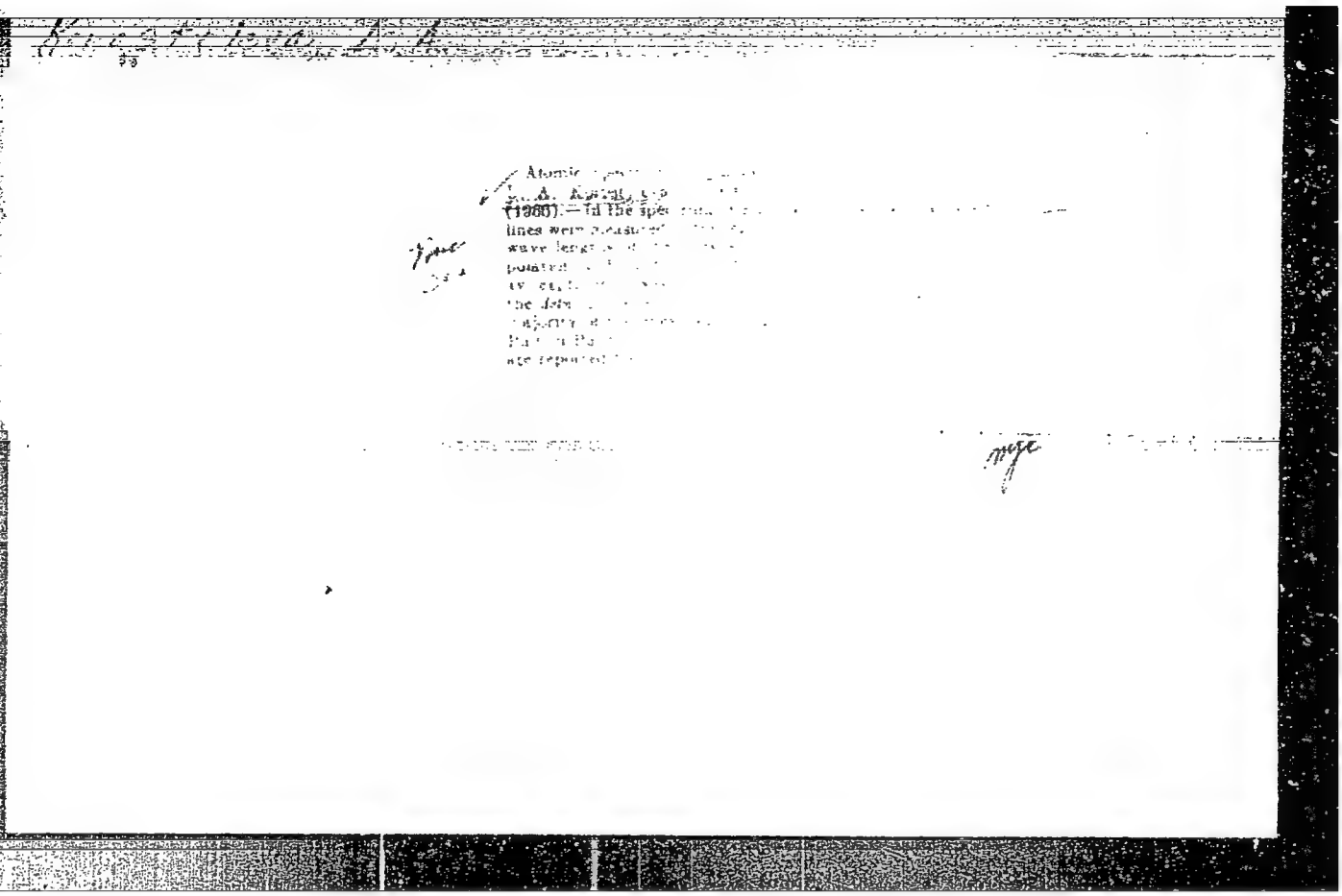
Title : Investigation of the isotopic effect in the spectrum of uranium

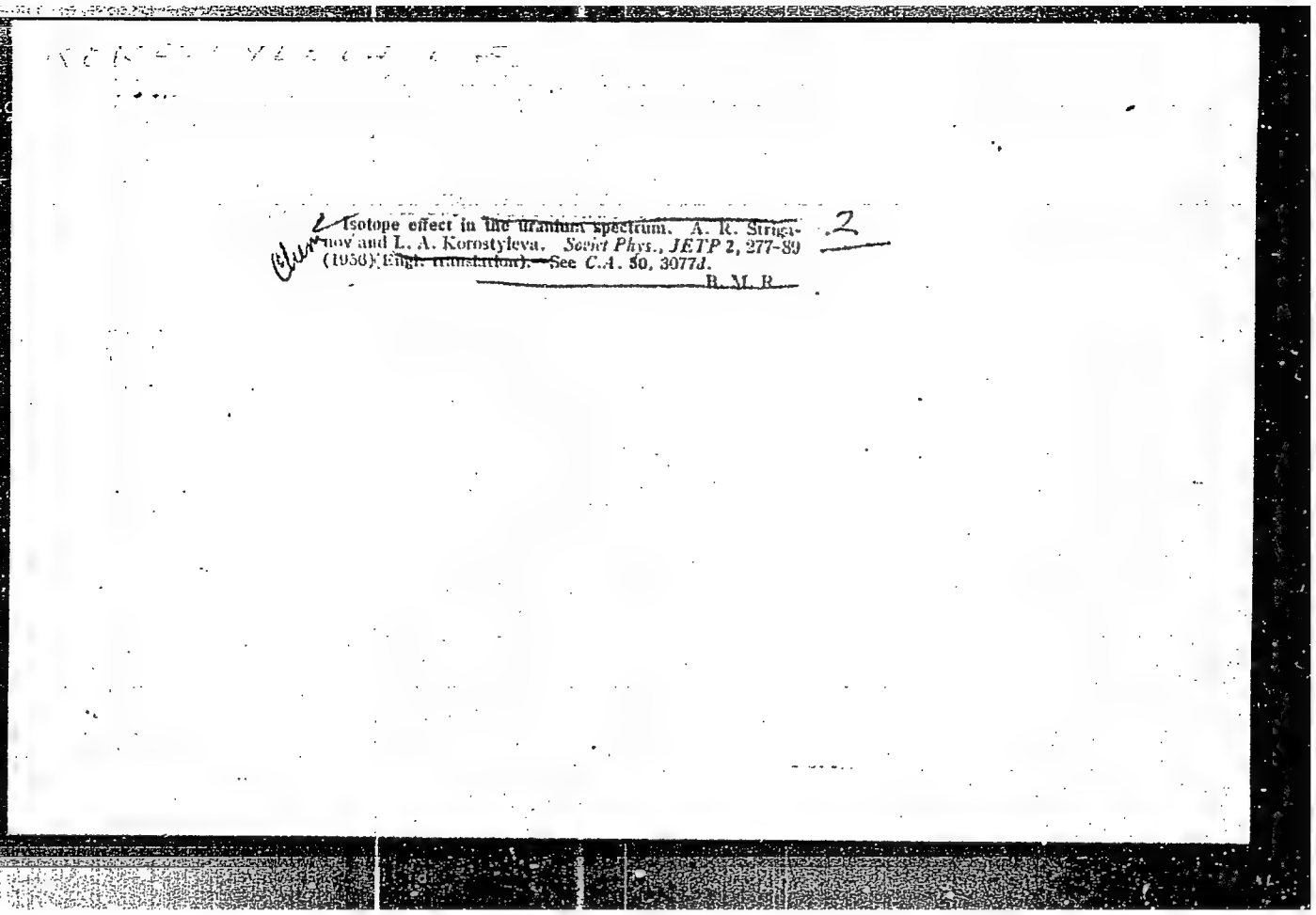
Periodical : Zhur. eksp. i teor. fiz., 29, October 1955, 393-405

Abstract : The authors measure the isotopic displacement in the spectrum of uranium between the components of the isotopes U-238 and U-235 for 346 lines. They use the obtained regularities in the isotopic displacement for the extension of the classification of the spectrum of uranium and for the establishment of the isotopic displacement in certain terms of U I and U II. Proceeding from the displacement of the terms $5f^4 7s^6$ $I_{9/2}$ and $5f^3 7s^2$ $I_{9/2}$ the authors find that the lowest electron configuration for U II is $5f^4 7s$. Nine references, all Western.

Institution :

Submitted : May 10, 1955





Isotope effect in the uranium spectrum. A. R. Striganov and L. A. Korostyleva. *Soviet Phys., JETP* 2, 277–89 (1956) (Engl. translation). See *C.A.* 50, 3077*d*.

R. M. R.

2

KOROSTYLEVA, L.A.

51-5-11/11

AUTHOR: Korostyleva, L.A.

TITLE: Isotopic Shift in the Spectrum of Cerium (Izotopicheskoye smeshcheniye v spektre tseriya)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr 5, pp.536-544 (USSR)

ABSTRACT: The aim of the present work was to determine the isotopic shift between the components of isotopes Ce^{137}-Ce^{138}-Ce^{140}. In addition an attempt was made to study in greater detail the isotopic shift of the spectrum of cerium between the components of the isotopes Ce^{140}-Ce^{142} and to determine from the isotopic shift the possible electron configurations of the levels taking part in energy transitions. The experimental set up was as follows: a source of light was an aluminium tube with a hollow cathode cooled by liquid air. The construction of this tube and the evacuating apparatus has already been described in Ref.(4). A Fabry-Perrot interferometer served as the high resolution instrument and was used in conjunction with a 3-prism Zeiss spectrograph (focal distance of the camera 84 cm). The coefficient of reflection of the silver coatings was about 90% in the region 4000-4500 Å. The specimen was in the

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Isotopic Shift in the Spectrum of Cerium.

intensity, the third column gives the shift (142-140) in cm^{-1} and the fourth column gives the classification. The experimental results have established the existence of an anomaly in the isotopic shift in the spectrum of cerium, between isotopes whose nuclei consist of 82-84 neutrons. It is concluded that in a transition from the isotope having 82 neutrons to the isotope having 84 neutrons, a completion of a shell occurs due to the extra pair of neutrons. The observed jump in the isotopic shift between the composition of the isotopes Ce^{140}-Ce^{142} appears to be a result of a sharp increase in the nuclear radius and a change in the charge distribution in the nucleus of the isotope with 84 as the neutron number. A.R.Striganov is thanked for suggesting this problem and other help. There are 4 figures, 3 tables and 10 references, 3 of which are Slavic.

SUBMITTED: April 6, 1957.

AVAILABLE: Library of Congress.

Card 3/3

AUTHORS: Dontsov, Yu. P., Korostyleva, L. A. SOV/48-22-6-12/28

TITLE: The Isotopic Displacement in Spectra of Cerium and Zirconium (Izotopicheskoye smeshcheniye v spektrakh tseriya i tsirkoniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 683-685 (USSR)

ABSTRACT: In the introduction it is pointed out that this displacement occurs with the magic numbers 50 and 82; in transition of N = 82 to N = 84 points of discontinuity were found by Murakawa (Ref 1) as well as by Arroe (Ref 2), but the data supplied by these authors do not agree. It has hitherto not yet been proved that "displacement discontinuities" occur within the range of the magic neutron number of 50. For the investigation of the isotopic displacement for cerium and zirconium the usual method (Ref 3) of exciting and photographing spectra was employed. With the isotopes Ce^{136}, Ce^{138} and Ce^{140} this displacement was less than half the width of the spectral line. It was further found that displacement between the isotopes 140 and 142 is nearly four times as great as between the isotopes 138 and 140. It was further found that the volume effect in the zirconium spectrum contributes

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towards bringing about full displacement. In this paper a schematical representation of the relative position of the components of isotopic lines within the range of the magic numbers 50 and 82 is given. The recently published work by R. Hughes (Ref 5) concerning the displacement with respect to volume of the components of the isotopic lines of strontium is mentioned, which indirectly confirms the here discussed theory of "displacement discontinuities". Moreover, the theory developed by L. Wilets (Ref 6) et al. is mentioned, in which all anomalies in isotopic displacements were explained by the variable deformation of nuclei. In this connection it is pointed out that the lack or the abundance of neutrons cannot cause nuclear deformation if the filled shell is taken into account, for the conveyance of a neutron pair to the closed shell alone causes a distinct enlargement of the nuclear radius, which is manifested by the "discontinuities" in isotopic displacements when passing through the magic numbers. The filling of different sub-shells with an increase of the

number of neutrons in the nucleus may cause a deviation from the law $r=R_0.A^{1/3}$, which is here described as the probable cause of the variable amount of isotopic displacement found to occur. There are 1 figure and 6 references, 1 of which is Soviet.

1. Cerium isotopes (Radioactive)--Spectra 2. Zirconium isotopes (Radioactive)--Spectra

SOV/51-7-2-1/34

AUTHORS: Korostyleva, L.A. and Striganova, G.A.

TITLE: Isotopic Shift in the Uranium Spectrum (Izotopicheskoye smeshcheniye v spektre urana)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 2, pp 137-140 (USSR)

ABSTRACT: The authors measured the isotopic shift in the uranium spectrum using a Fabry-Perot interferometer crossed with a three-prism glass spectrograph ISP-51. The isotopic shift was measured in the region 4000-6000 Å. A discharge tube with a hollow aluminium cathode was used as the source of light. The samples used in measurements had 30% of U^{235} and 70% of U^{238} (the metal was prepared by reduction of U_3O_8 in a hydrogen discharge). Three spectra were obtained with the Fabry-Perot interferometer plates 2, 6 and 10 mm apart. The spectra were excited in an atmosphere of argon at a pressure of 1.5 mm Hg using a current of 0.1 A. The isotopic shift was measured on 46 uranium lines with two-component isotopic structure (the hyperfine structure of the U^{235} components of these lines was not resolved). The results are shown in Table 1, where col 1 gives the wavelengths, col 2 - the intensities, col 3 - the isotopic shifts $\Delta(U^{238} - U^{235})$ and col 4 gives the classification of certain lines (Refs 7, 8) and the authors' data on

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atomic states and electron configurations. Forty lines had negative shift and six - positive shift. This agrees with the results published by other workers. Table 2 gives the isotopic shifts for eight terms of the neutral atom and three terms of the ionized atom. The shifts listed in Table 2 are all positive, i.e. the level of the lighter isotope lies lower than the level of the heavier isotope, in agreement with the theory of the volume effect. The authors established that six lines studied are due to U II emission and predicted the most probable electron configuration of the lower term. There are 2 tables and 8 references, 1 of which is Soviet, 5 English, 1 Dutch and 1 translation from English into Russian.

SUBMITTED: September 15, 1958

38525

S/051/62/012/006/002/020
E032/E314

24.6200

AUTHOR: Korostyleva, L.A.

TITLE: Optical hyperfine structure and the magnetic moment of plutonium 239

PERIODICAL: Optika i spektroskopiya, v. 12, no. 6, 1962, 671 - 676

TEXT: The aim of this work was to investigate the hyperfine structure in the spectrum of Pu^{239} in order to determine the sign and the magnitude of the magnetic moment. The author considers that the previous work on this (Ref. 3 - R.J. Champean, S. Gerstenkonn - Compt. Rend., 251, 352, 1960) has not led to satisfactory results. The spectrum of plutonium in the region 5900 - 6900 Å was recorded with the aid of a glass Fabry-Perot interferometer crossed with a three-prism ИСП-51 (ISP-51) spectrograph. The spectrum was produced with the aid of a liquid-air-cooled aluminium discharge tube. A bright spectrum was excited in an argon atmosphere at 1.5 mm Hg (80 mA). A more detailed description of the experimental part is given in a previous paper (Ref. 4 - the author and A.R. Striganov,

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S/051/62/012/006/002/020
E032/E314

Optical hyperfine ....

N.M. Yashin - ZhETF, 28, 471, 1955). The hyperfine structure of 236 lines was examined. Analysis of the results showed that the maximum splitting was of the order of 0.271 cm^{-1} and the minimum splitting was of the order of 0.021 cm^{-1}. Most of the lines had a doublet structure with the intensities of the various components of the same order of magnitude. Next, the magnetic interaction constants were determined for the terms $^8F_{1/2}$, $^8F_{5/2}$, $^8F_{7/2}$, $^6F_{3/2}$ and $^6F_{5/2}$ of the $5f^6 7s$ configuration. These results were then used to calculate the magnetic splitting constant a_s for the 7s electron. The Goudsmith-Fermi-Segre formula is then used in conjunction with these results to show that the average magnetic moment of Pu^{239} is +0.15 nuclear magnetons. The error in this is estimated as not more than 30%. This result

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is in considerable disagreement with the result obtained by J.C. Hubbs et al (Ref. 2 - Phys. Rev., 109, 590, 1958) but is consistent with that reported by B. Bleaney et al (Ref. 1 - Phil. Mag., 45, 991, 1954).
There are 2 tables.

SUBMITTED: May 26, 1961

Card 3/3

S/051/63/014/002/001/026
E032/E314

AUTHOR: Korostyleva, L.A.

TITLE: Hyperfine and ~~isotopic~~ structure in the spectrum of plutonium

PERIODICAL: Optika i spektroskopiya, v. 14, no. 2, 1963, 177-183

TEXT: The spectrum of Pu is so complicated that complete identification of spark and arc lines in its spectrum has not been available. The aim of this work was to carry out a detailed study of isotopic shifts and hyperfine structure in the spectrum of Pu to obtain further data on the spectral classification. The samples were in the form of fluorides of Pu^{239} and Pu^{240}. They were deposited on the walls of the hollow aluminium cathode of a discharge tube and the discharge was excited in an argon atmosphere at a pressure of 1.5 mm Hg (60-80 mA). The spectra were examined with a Fabry-Perot interferometer crossed with an ИСП-51 (ISP-51) spectrograph and a УФ-84 (UF-84) camera. Isotopic shift were obtained for 118 lines in the range 3900 - 6900 Å. The average shifts were determined to within $\pm$ 0.002 cm^{-1}. A detailed numerical table of all the results obtained is reproduced. 51 of these lines

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Hyperfine and isotopic ....

were found to have only an isotopic structure, while the remaining lines had an isotopic and hyperfine structure. The data indicate that the isotopic shift in the spectrum of Pu varies between 0.027 and 0.48 cm^{-1}. Most of the lines exhibit a negative shift, i.e. a shift of Pu^{240} lines towards shorter wavelengths. Only 28 lines exhibit a positive shift. The latter lines are found to lie mainly in the long-wave region of the spectrum. The maximum hyperfine splitting found for 67 lines is of the order of 0.25; the minimum magnitude is 0.02 cm^{-1}. Analysis of the structure shows that the following tentative classification may be correct.
Group I: lines with negative shift in excess of 0.31 cm^{-1} (neutral atoms); probable transition $5f^6 6d7p \rightarrow 5f^6 7s^2$.
Group II: arc lines with shifts of the order of 0.27-0.31 cm^{-1}; most probable transition $5s^6 6d7p \rightarrow 5f^6 6d7s$.
Group III: arc lines with isotopic shifts of about 0.25 cm^{-1} - no hyperfine structure; probable identification $5f^5 6d^2 7p \rightarrow 5f^5 6d7s^2$.
Group IV: arc lines with average shift of 0.19 cm^{-1}; probable transition $5f^6 7s7p \rightarrow 5f^6 7s^2$.

Hyperfine and isotopic ....

Group V: shifts in the region of 0.12 - 0.17 cm^{-1}; probable transitions $5f^5 6d7s7p \rightarrow 5f^5 6d7s^2$ (arc lines) and $5f^6 7p \rightarrow 5f^6 7s\ ^{8,6}F$ (spark lines).
Group VI: average negative shift of the order of 0.09 cm^{-1}; identification $5f^5 6d7s^2 \rightarrow 5f^6 7s^2$ (arc lines) and $5f^6 7p \rightarrow 5s^2 7s\ ^{8,6}F$ (spark lines).
Group VII: mainly spark lines with small isotopic shift and large hyperfine structure; most probable transition is $5f^6 6d7s \rightarrow 5f^6 7s\ ^{8,6}F$.
Group VIII: positive isotopic shifts in the range 0.06-0.18 cm^{-1}; probable transitions $5f^6 7s8s \rightarrow 5f^6 7s7p$ (arc lines), $5f^5 6d7s \rightarrow 5f^6 6d$ or $5f^6 7p \rightarrow 5f^6 6d$ (spark lines).
There are 1 figure and 1 table.

SUBMITTED: March 10, 1962

Card 3/3

L 12912-65 EWT(1)/EWG(k)/EWT(m)/EPA(sp)-2/EPF(c)/EPF(n)-2/EPR/EPA(w)-2/T/
EWA/EWP(b) Pr-4/Ps-4/Pu-4/Pa-6/Pab-10 LJP(c) AT/JD/WW/JG

ACCESSION NR: AP4047168 S/0051/64/017/004/0469/0474

AUTHOR: Korosty*leva, L. A.

TITLE: Investigation of the spectrum of plutonium under different conditions of excitation in a hollow cathode

SOURCE: Optika i spektroskopiya, v. 17, no. 4, 1964, 469-474

TOPIC TAGS: plutonium, arc spectrum, spark spectrum, spectrum, line intensity

ABSTRACT: In view of the incomplete identification of the arc and spark spectra of plutonium to date, and in view of the inconsistencies in the published data, the authors investigated the behavior of the spectrum of neutral and singly-ionized plutonium atoms in the 3900--6700 Å range, under different discharge conditions in a hollow cathode. The light source was a hollow-cathode aluminum tube containing 10 ng of plutonium fluoride. The plutonium spectrum

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L 12912-65
ACCESSION NR: AP4047168

was excited in atmospheres of argon, krypton, and their mixtures with helium. The discharge current was constant at 100 mA in all cases. The spectrum was photographed on aerial film with exposures from 1.5 to 5 minutes. The relative line intensity was determined by photographic photometry. A hollow-cathode light source containing iron was used as a source for photography of the photographic density scale. The results show that with increasing pressure of argon or krypton (at 0.3--1.8 mm Hg), the spark spectrum becomes stronger than the arc spectrum. On the other hand, addition of helium to argon or krypton reduces the intensity of the spark lines compared with the arc lines; the intensity of these lines decreases with increasing helium concentration. These peculiarities were used to separate the spark and arc spectra by determining the change of intensity of the lines with increasing pressure and concentration of helium in the gas mixture. A total of 275 plutonium lines were classified as belonging to PuI or PuII. It is pointed out that this method does not distinguish between an ion line and a line of a

Card 2/3

L 12912-65
ACCESSION NR: AP4047168

neutral atom, and other effects (Zeeman effect, isotopic structure, hyperfine structure) must be used for further identification in this case. "In conclusion I thank A. R. Striganov who guided this work." Orig. art. has: 4 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 12Jun63 ENCL: 00

SUB CODE: OP NR REF SOV: 004 OTHER: 008

Card 3/3

L 24272-66 EWT(1)/EWT(m)/EPF(n)-2/EWP(t) DIAAP/IJP(c) JD/WW/JG/AT

ACC NR: AP6006992 SOURCE CODE: UR/0051/66/020/002/0194/0196

AUTHOR: Korostyleva, L. A.

ORG: none

TITLE: Determination of the magnetic moment of Pu-239

SOURCE: Optika i spektroskopiya, v. 20, no. 2, 1966, 194-196

TOPIC TAGS: plutonium, magnetic moment, hyperfine structure, line splitting

ABSTRACT: The author presents a detailed analysis of the hyperfine structure in the PuII spectrum, using previously obtained experimental data on the identification of the lines of neutral and ionized atoms in the plutonium spectrum (Paper at the 15th Conference on Spectroscopy, Minsk, 1963). The magnetic splitting factors were determined from the data on the classified lines of the Pu ion. From the magnetic splitting factors for the $^8F_{1/2}$, $^8F_{3/2}$, $^8F_{5/2}$, $^8F_{7/2}$,

Card 1/2 UDC: 535.338.333 + 539.121.43:546.799.4

L 24272-66

ACC NR: AP6006992

$^6F_{1/2}$, $^6F_{3/2}$, and $^6F_{5/2}$ terms of the $5f^6 7s$ configuration were obtained as a result, and the average value of the magnetic splitting factor is 0.301 ± 0.14 cm^{-1}. This is claimed to be a more accurate value than obtained in earlier researches. The magnetic moment of Pu^{239} was calculated by means of the Goudsmit-Fermi-Segre formula under the assumption that the Jj coupling holds in the case of plutonium, and was found to be 0.19 nuclear magnetons. The author thanks A. R. Striganov who directed this research. Orig. art. has: 1 formula and 2 tables.

SUB CODE: 20/ SUBM DATE: 30Nov64/ ORIG REF: 002/ OTH REF: 006

Card 2/2 dda

L 31506-66 EWT(m)/EWP(t)/ETI IJP(c) JD/WW/JG
ACC NR: AP6013016 SOURCE CODE: UR/0051/66/020/004/0545/0553

AUTHOR: Korostyleva, L. A.; Striganov, A. R. 62

ORG: none 27 B

TITLE: Hyperfine and isotopic structure in the spectrum of plutonium and its classification

SOURCE: Optika i spektroskopiya, v. 20, no. 4, 1966, 545-553

TOPIC TAGS: plutonium, hyperfine structure, isotope, optic spectrum, spectrum analysis, line shift

ABSTRACT: This is a continuation of earlier work by one of the authors (Korostyleva, Opt. i spektr. v. 14, 177, 1963 and earlier) dealing with the investigation of the hyperfine and isotopic structure in the spectrum of plutonium, and a paper by Korostyleva (ibid. v. 17, 469, 1964) where further identification of the Pu I and Pu II lines made by exciting the spectrum in a hollow cathode at different discharge conditions. The present paper is devoted to additional analysis of the hyperfine and isotopic structure, based on the totality of the experimental results. It is shown that all the 275 lines investigated can be classified with respect to the magnitude and direction of the isotopic shift into six groups, for

Card 1/2 UDC: 539.184.26: 546.799.4

which the characteristics and the transitions are given. Level schemes for Pu I and Pu II are presented and the transitions causing the main lines of Pu are identified on this basis. A complete table of the arc and spark lines of Pu is included. Orig. art. has: 2 figures and 2 tables.

SUB CODE: 20/ SUBM DATE: 30Nov64/ ORIG REF: 006/ OTH REF: 008

Card 2/2 mc

TRAKHTENBERG, S.I.; KOROSTYLEVA, R.N.

Determination of the composition of products of graft copolymerization of esters of acrylic acid with casein. Dokl. LPI 5 no. 1/2:20-24 '63. (MIRA 17:6)

NAMYATYSHEVA, A.M.; FEDOROV, N.A., prof.; KOROSTYLEVA, V.A.; RUDASHEVSKAYA, M.M.

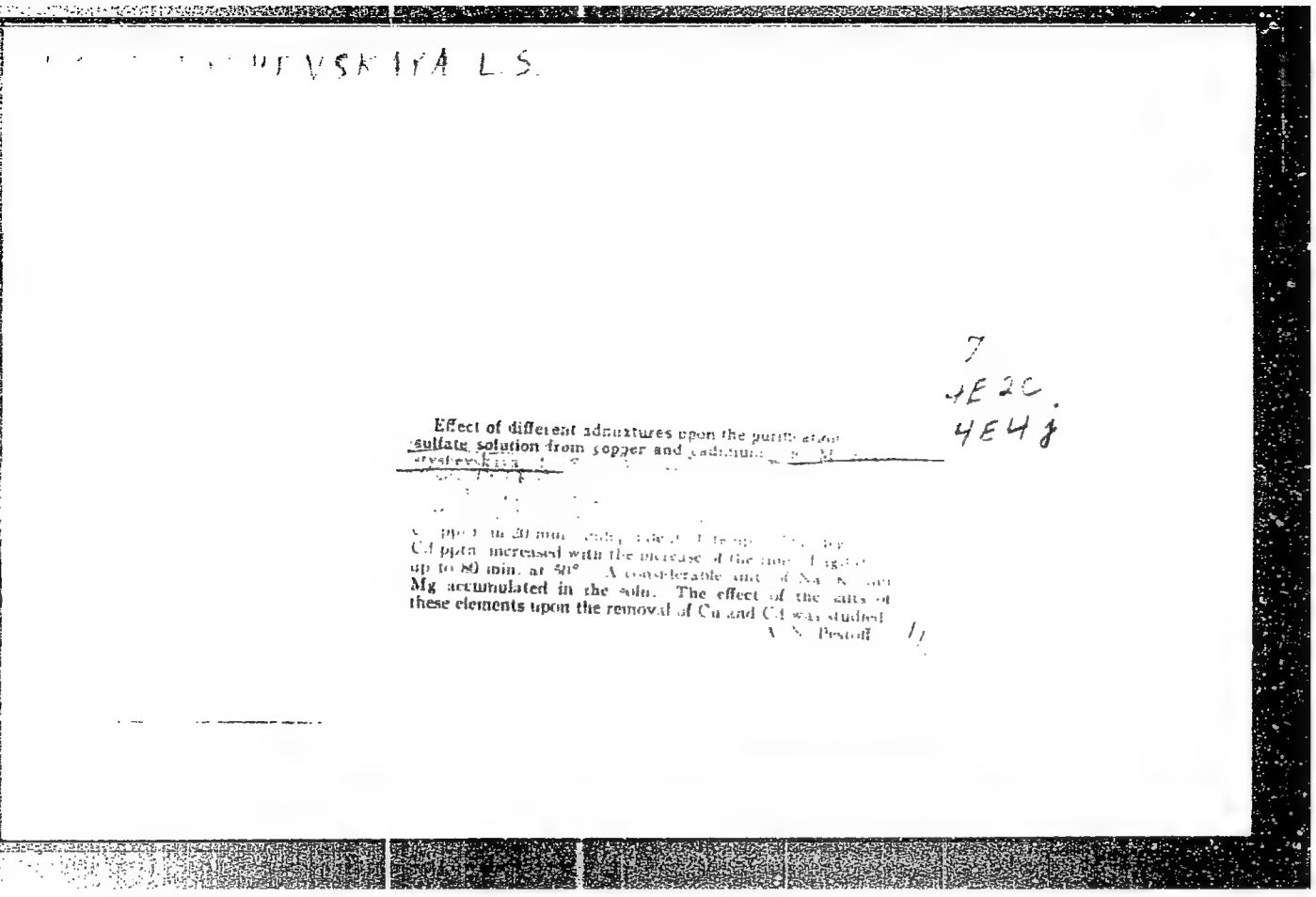
Effect of antithrombocytic cytotoxic serum on hematopoiesis in dogs. Probl. gemat. i perel. krovi 10 no.2:19-25 F '64. (MIRA 19:1)

1. Patofiziologicheskaya laboratoriya (zav. - deystvitel'nyy chlen AMN prof. N.A. Fedorov) TSentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi (dir. - dotsent A.Ye. Kiselev) Ministerstva zdravookhraneniya SSSR, Moskva. 2. Deystvitel'nyy chlen AMN SSSR (for Namyatysheva).

YERAMYAN, S.G., KOROSTYLEVA, Ye.F. (Moskva)

Spontaneous pneumothorax in a virtually healthy person. Gig.truda i prof.zab. 2 no.2:55 Mr-Ap '58 (MIRA 11:6)

1. Kafedra profbolezney TSentral'nogo instituta usovershenstvovaniya vrachey.
(PNEUMOTHORAX)



[illegible] IVSKIYA L.S.

7
4E2C
4E4g

Effect of different admixtures upon the purification of sulfate solution from copper and cadmium [illegible] by [illegible]

[illegible] up to 30 min. [illegible] Cl ppm increased with the increase of the [illegible] up to 80 min. at 50°. A considerable [illegible] Mg accumulated in the soln. The effect of the salts of these elements upon the removal of Cu and Cl was studied.

V. S. Pestoff 1/

KOROSTYSHEVSKAIA, R. M.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Apparatus, Plant Equipment, and Unit Operations

Apparatus for recrystallization of sodium sulfide. V. D. Ponomarev and R. M. Korostyshevskaya. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 118, Ser. Khim.*, No. 6, 78–81 (1953).—A continuous-flow system of several vessels, equipped for crystn., liquid and solid transfer in inert atm. (H_2) is shown. This is suitable for purification of Na_2S or other substances. G. M. Kosolapoff

KOROSTYSHEVSKAYA, R. M.

Chemical Abstr.
Vol. 48 No. 9
May 10, 1954
Apparatus, Plant Equipment, and Unit Operations

(3)

Apparatus for determination of electroconductivity and viscosity of solutions. V. D. Ponomarev and R. M. Korostyshevskaya. *Inst. Akad. Nauk Kazakh. S.S.R.* No. 123, *Sér. Khim.* No. 7, 125-6(1953).—For detn. of cond. and viscosity of solns. of NaSH and Na_2S without contact with air an enclosed app. was constructed (diagram shown). The cond. portion is conventional while the viscosity detn. is made on the same sample in the same app. by provision of a capillary connection between the cond. app. and a storage reservoir of the soln. (Usanovich, *et al.*, *C.A.* **34**, 3166⁹). G. M. Kosolapoff

8-31-54 gjp

PONOMAREV, V.D.; KOROSTYSHEVSKAYA, R.M.

Survey of methods used for analyzing sodium sulfide and sodium hydrosulfide. Trudy Alt.GMMII AN Kazakh.SSR 1:87-106 '54.

(MIRA 10:1)

(Sodium sulfide) (Sodium dithionite) (Chemistry, Analitical)

KOROSTYSHEVSKAYA, R.M.; DUKHANKINA, L.S.; BUTENKO, N.S.

Effect of various impurities on the removal of copper and cadmium from zinc sulfate solutions. Trudy Alt.GMMI no.2:112-128 '55.
(MIRA 10:1)
(Zinc sulfate) (Copper--Electrometallurgy) (Cadmium--Electrometallurgy)

KOROSTOSHEVSKAYA, S.

Prompted by life. Prof.-tekh. obr. 18 no.9:29 S '61. (MIRA 14:11)

1. Nachal'nik otdela podgotovki kadrov kombinata "Krasnaya Roza", Moskva.

(Moscow—Textile workers—Education and training)

KOROSTYSHEVSKIY, D.

Mold production improves. Na stroi. Ros. no.7:21-23 Jl '61.
(MIRA 14:8)

1. Direktor zavoda No.1 Kuybyshevskogo tresta Zhelezobeton.
(Kuybyshev--Precast concrete)

GOL'DENFEL'D, I.V.; KOROSTYSHEVSKIY, I.Z.

Device for calibrating the sensitivities of ion-current measurement channels of a double-beam mass spectrometer. Prib. i tekh.eksp. 6 no.6:83-85 N-D '61. (MIRA 14:11)

1. Institut fizicheskoy khimii AN USSR.
(Mass spectrometry--Equipment and supplies)

SOV/137-58-12-24313

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 54 (USSR)

AUTHOR: Korostyshevskiy, N. B.

TITLE: Complex Utilization of the Useful Components of Tin-lithium Ore (Kompleksnoye ispol'zovaniye poleznykh komponentov olovo-litiyevoy rudy)

PERIODICAL: Tr. Vses. Magadansk. n.-i. in-ta—I M-va tsvetn. metallurgii SSSR, 1957, section 4, Nr 21, pp 1-12

ABSTRACT: The ore in question contains Sn and Li with valuable admixtures Nb, Ta, Rb, Cs, and Ga, which go into selective Sn and Li concentrates upon beneficiation. A flowsheet for complex utilization of lepidolite concentrate, permitting recovery of Li as Li_2CO_3 and Rb as alums, with H_2SO_4 as the major reactant is presented. Extraction of the two metals attains 80-85%. The possibility of recovering Ta and Nb from an Sn concentrate is proved in principle. Bibliography: 7 references.

V. S.

Card 1/1

ZHELNOV, P.A., kand.; KOROSTYSHEVSKIY, Ye.A., inzh.

Analysis and calculation of high-frequency channels using power supply cable networks in mines. Izv. vys. uchab. zav.; gor. zhur. 7 no.11:174-183 '64. (MIRA 18:3)

1. Institut gornogo dela Sibirskogo otdeleniya AN SSSR. Rekomendovana laboratoriyey gornoy avtomatiki i telemekhaniki.

L 27985-66 EWA(h)/EWT(1)

ACC NR: AP6005297 (A) SOURCE CODE: UR/0413/66/000/001/0037/0037

INVENTOR: Korostyshevskiy, Ye. A.; Zhelnov, P. A.

ORG: none

TITLE: A filter for high-frequency bypass of supply feeders in electric transmission networks. Class 21, No. 177466

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 37

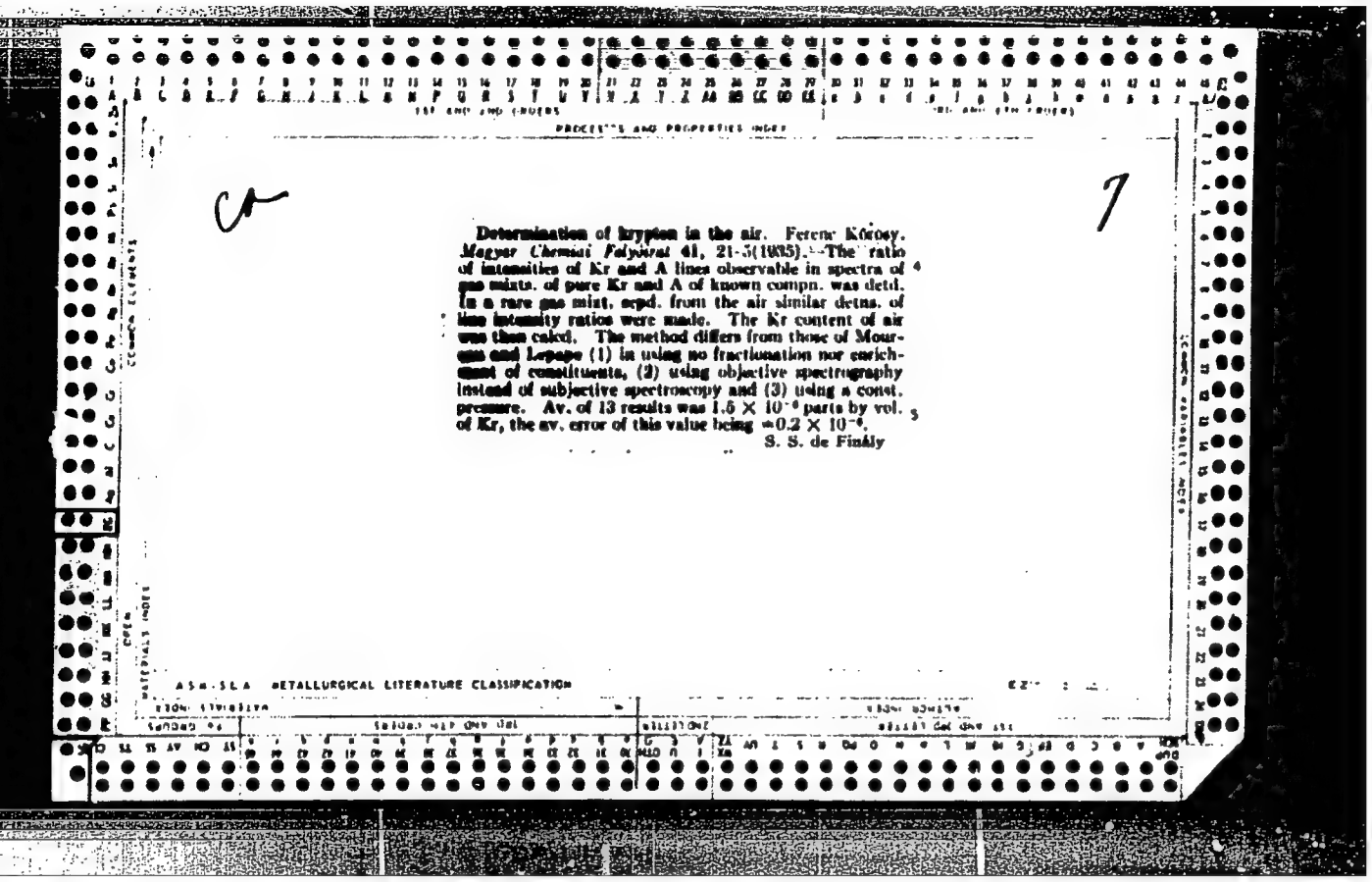
TOPIC TAGS: electric power transmission, electric filter, filter circuit

ABSTRACT: This Author's Certificate introduces a filter for high-frequency bypass of supply feeders in electric transmission networks, particularly in the contact networks of electric transportation systems. The unit contains distributed inductances for sections of the network and lumped capacitances tuned to the high-frequency signal. In order to reduce the effect of changes in the load on the supply feeder, suppress interference and simplify the entire installation, the filter is made in the form of a four-terminal electric bridge with arms which are sections of the contact network on both sides of the point where the supply feeder is connected together with the tuned capacitors. The capacitors are connected between the ends of the network section with zero potential. A bypass capacitor is connected in one diagonal of the bridge between the feeder connection point and the zero potential, and a bypass wire

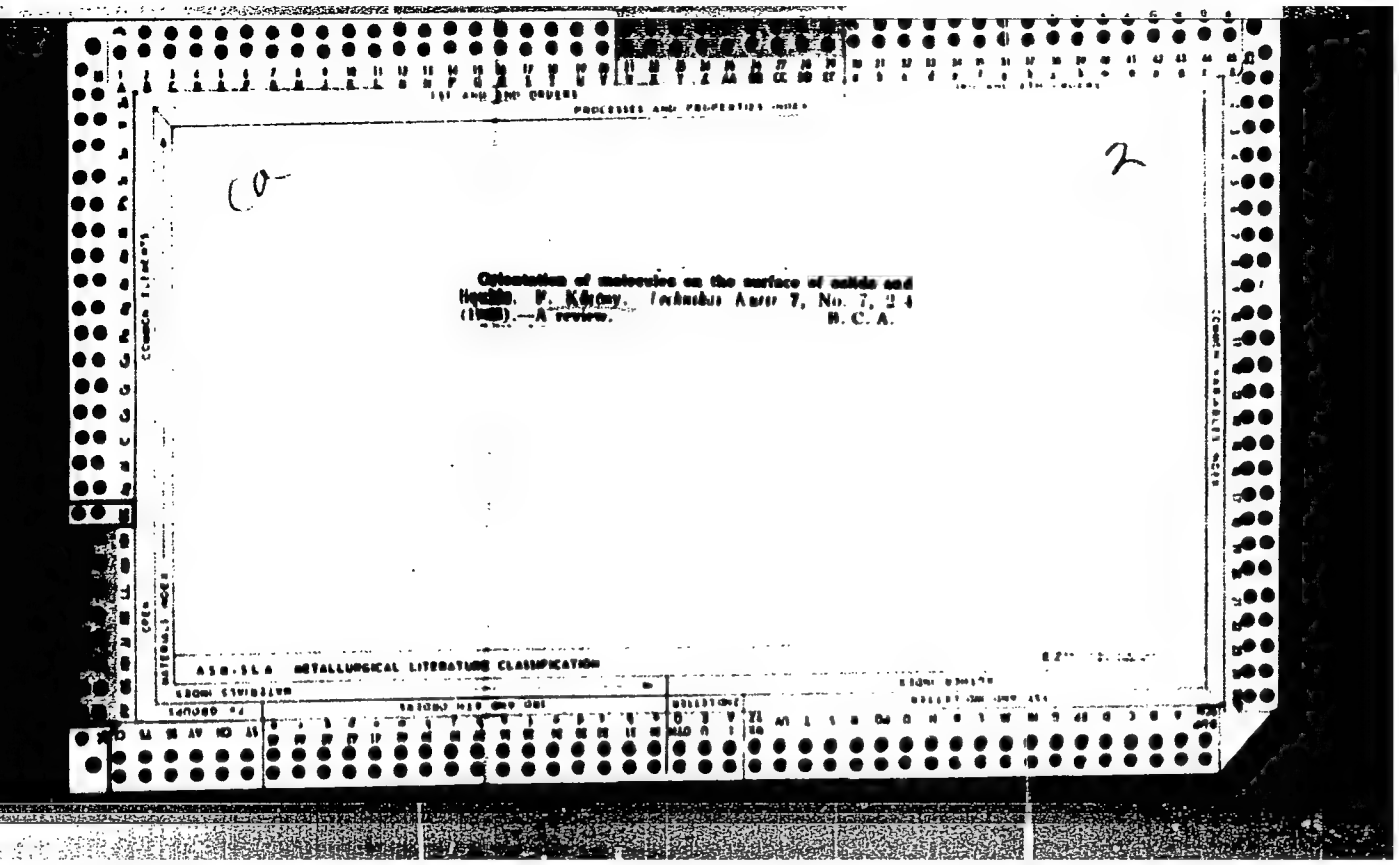
UDC: 621.315.052.66
621.372.543.3

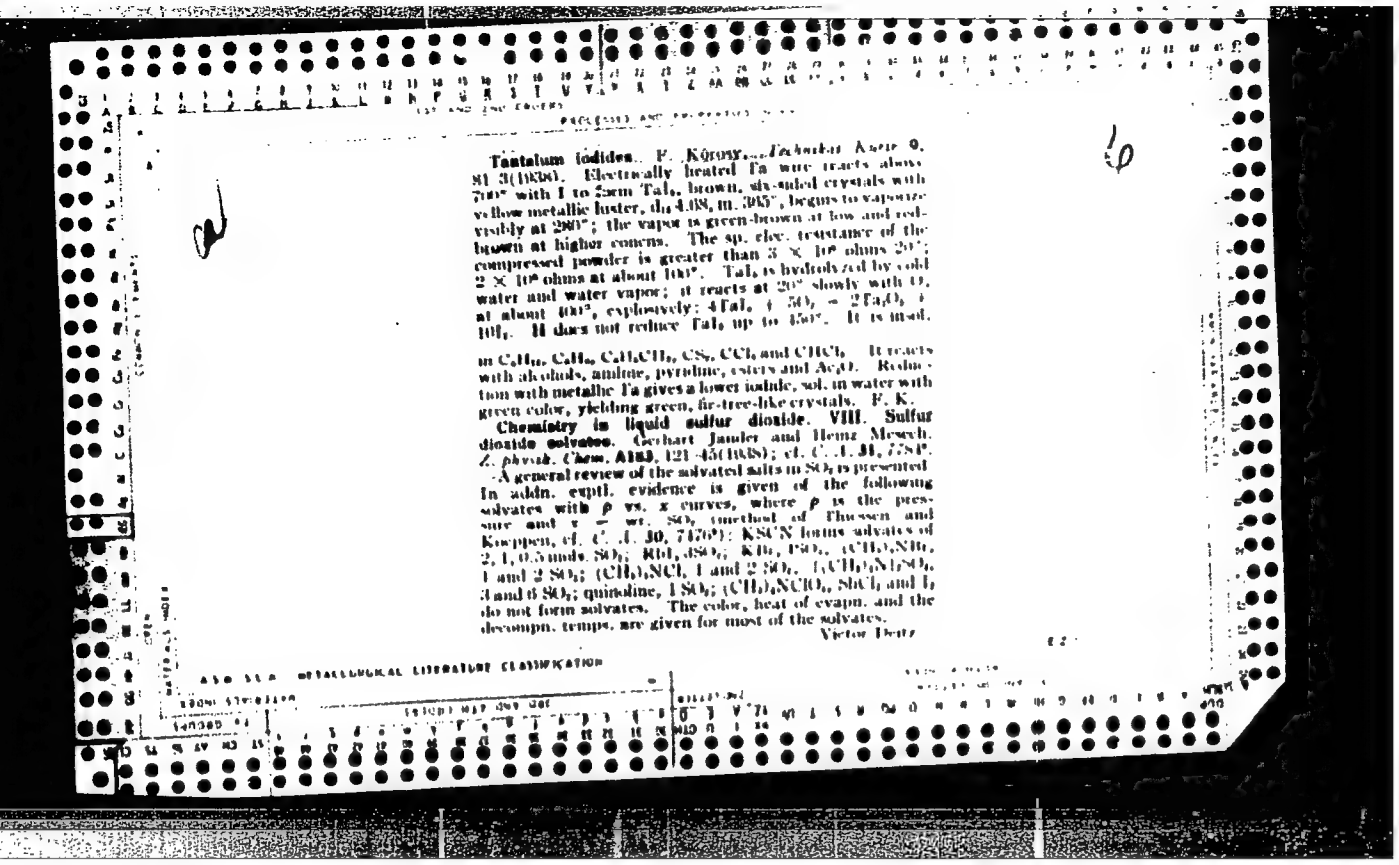
Card 1/2

Card 2/2



Determination of krypton in the air. Ferenc Kórösy. *Magyar Chemiai Folyóirat* 41, 21-5(1935).—The ratio of intensities of Kr and A lines observable in spectra of gas mixts. of pure Kr and A of known compn. was detd. In a rare gas mixt. sepd. from the air similar detns. of line intensity ratios were made. The Kr content of air was then calcd. The method differs from those of Mourgan and Lepape (1) in using no fractionation nor enrichment of constituents, (2) using objective spectrography instead of subjective spectroscopy and (3) using a const. pressure. Av. of 13 results was 1.5×10^{-6} parts by vol. of Kr, the av. error of this value being $\pm 0.2 \times 10^{-6}$.
S. S. de Finály

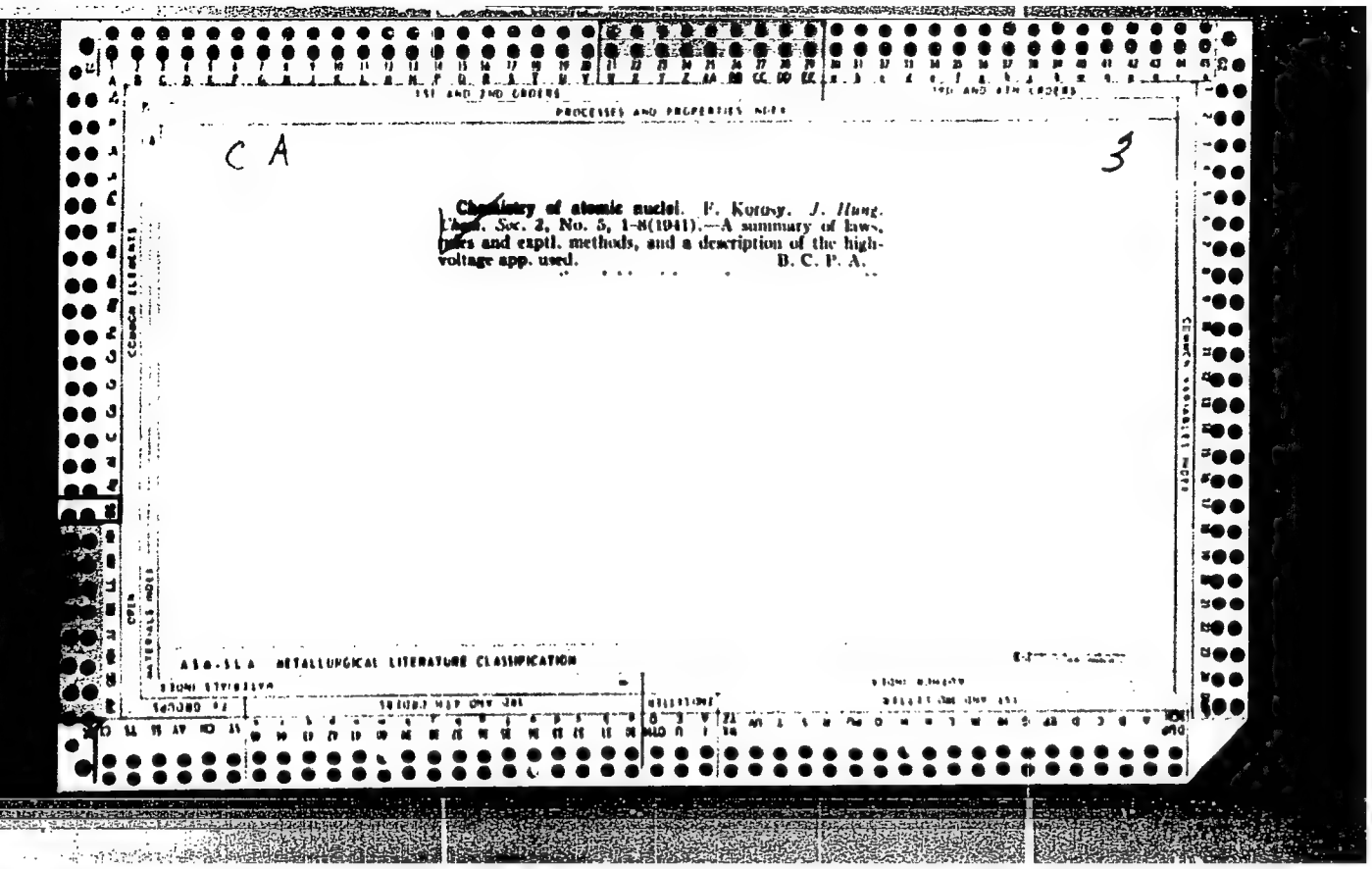




Tantalum iodides. F. Körösy. *Zeitschrift Anorg. 91*, 81-3(1938). Electrically heated Ta wire reacts above 700° with I to form TaI_5, brown, six-sided crystals with yellow metallic luster, d_{18} 4.08, m. 395°, begins to vaporize visibly at 280°; the vapor is green-brown at low and red-brown at higher concns. The sp. elec. resistance of the compressed powder is greater than 3×10^8 ohms 20°; 2×10^6 ohms at about 100°. TaI_5 is hydrolyzed by cold water and water vapor; it reacts at 20° slowly with O_2, at about 400°, explosively: $4TaI_5 + 5O_2 = 2Ta_2O_5 + 10I_2$. H does not reduce TaI_5 up to 450°. It is insol. in C_6H_{12}, C_6H_6, CaH_2CH_2, CS_2, CCl_4 and $CHCl_3$. It reacts with alcohols, aniline, pyridine, esters and AcOH. Reduction with metallic Ta gives a lower iodide, sol. in water with green color, yielding green, fir-tree-like crystals. F. K.

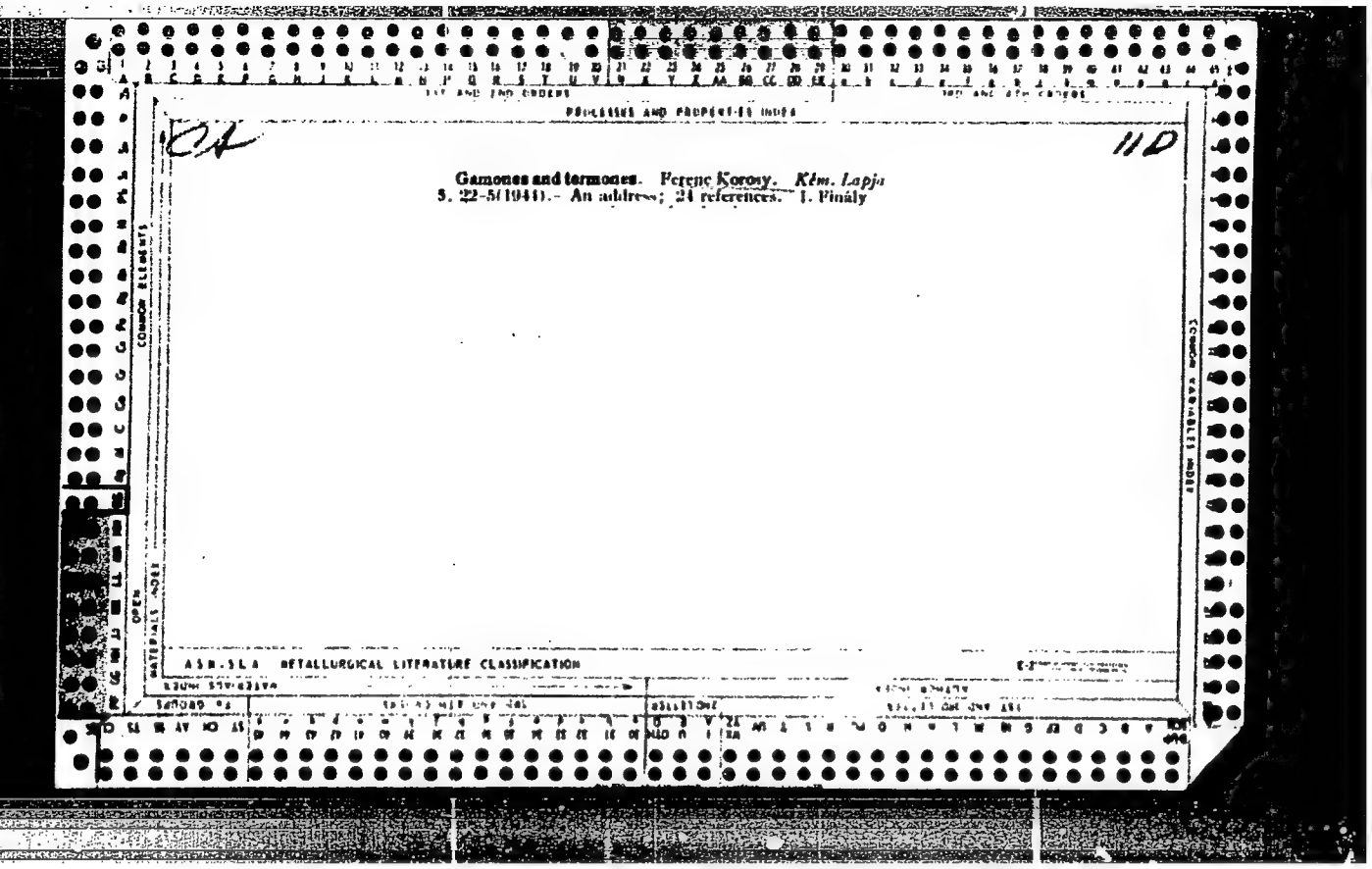
Chemistry in liquid sulfur dioxide. VIII. Sulfur dioxide solvates. Gerhart Jander and Heinz Merveh. *Z. physik. Chem. A183*, 121-45(1938); cf. *C. A.* **31**, 7784°. A general review of the solvated salts in SO_2 is presented. In addn. exptl. evidence is given of the following solvates with p vs. x curves, where p is the pressure and x = wt. SO_2 (method of Thiessen and Koeppen, cf. *C. A.* **30**, 7476): KSCN forms solvates of 2, 1, 0.5 mols. SO_2; RbI, $4SO_2$; KI, $2SO_2$; $(CH_3)_4NI$, 1 and $2\ SO_2$; $(CH_3)_4NCl$, 1 and $2\ SO_2$; $[(CH_3)_4N]_2SO_4$, 3 and $6\ SO_2$; quinoline, $1\ SO_2$; $(CH_3)_4NClO_4$, SbCl$_3$ and I_2 do not form solvates. The color, heat of evapn. and the decompn. temps. are given for most of the solvates.

Victor Deitz

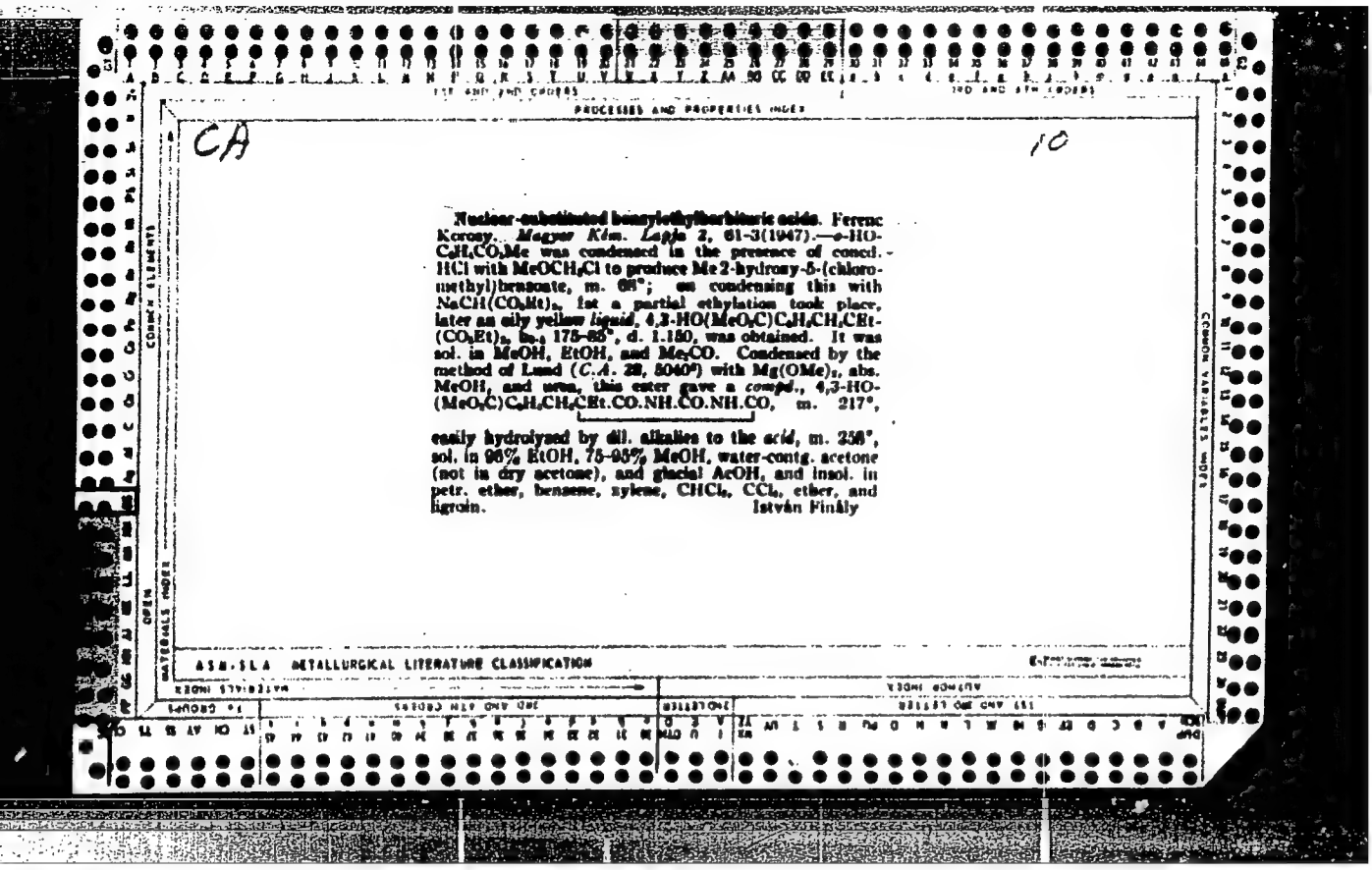


CA 3

Chemistry of atomic nuclei. F. Kutzey. *J. Hung. Chem. Soc.* 2, No. 5, 1–8(1941).—A summary of laws, rules and exptl. methods, and a description of the high-voltage app. used. B. C. P. A.



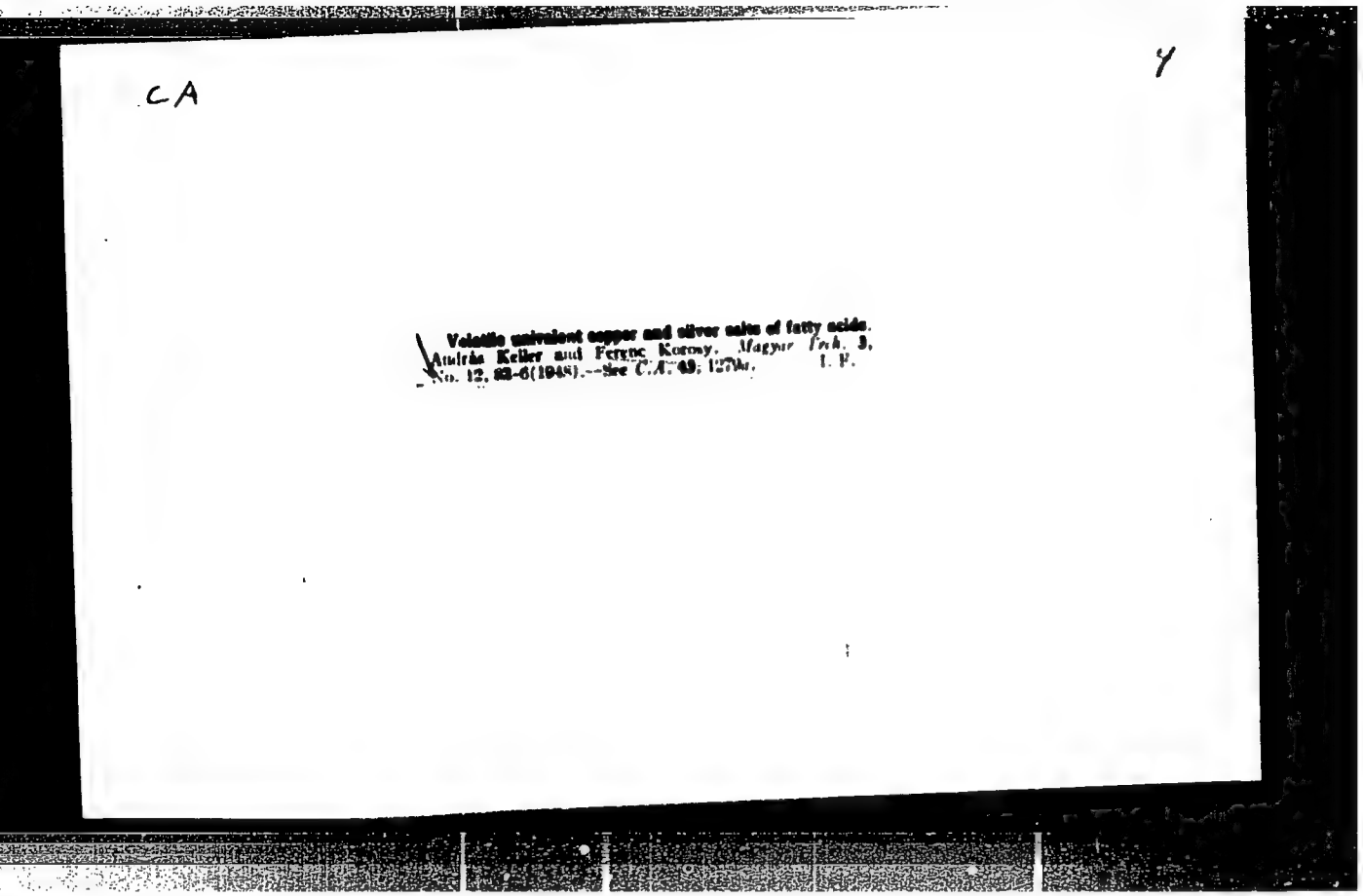
Gamones and termones. Ferenc Korosy. *Kém. Lapja* 5, 22-5(1944).— An address; 24 references. I. Pinály



CA 10

Nuclear-substituted benzylethylbarbituric acids. Ferenc Korosy. *Magyar Kém. Lapja* 2, 61-3(1947).—*o*-HO-$C_6H_4CO_2Me$ was condensed in the presence of concd. HCl with $MeOCH_2Cl$ to produce Me 2-hydroxy-5-(chloromethyl)benzoate, m. 68°; on condensing this with $NaCH(CO_2Et)_2$, but a partial ethylation took place, later an oily yellow *liquid*, 4,3-HO(MeO_2C)$C_6H_3CH_2CEt(CO_2Et)_2$, $b_{0.4}$ 175–85°, d. 1.180, was obtained. It was sol. in MeOH, EtOH, and Me_2CO. Condensed by the method of Lund (*C.A.* **28**, 5040⁹) with $Mg(OMe)_2$, abs. MeOH, and urea, this ester gave a *compd.*, 4,3-HO(MeO_2C)$C_6H_3CH_2CEt.CO.NH.CO.NH.CO$, m. 217°, easily hydrolyzed by dil. alkalies to the *acid*, m. 258°, sol. in 96% EtOH, 75–95% MeOH, water-contg. acetone (not in dry acetone), and glacial AcOH, and insol. in petr. ether, benzene, xylene, $CHCl_3$, CCl_4, ether, and ligroin.

István Finály



CA

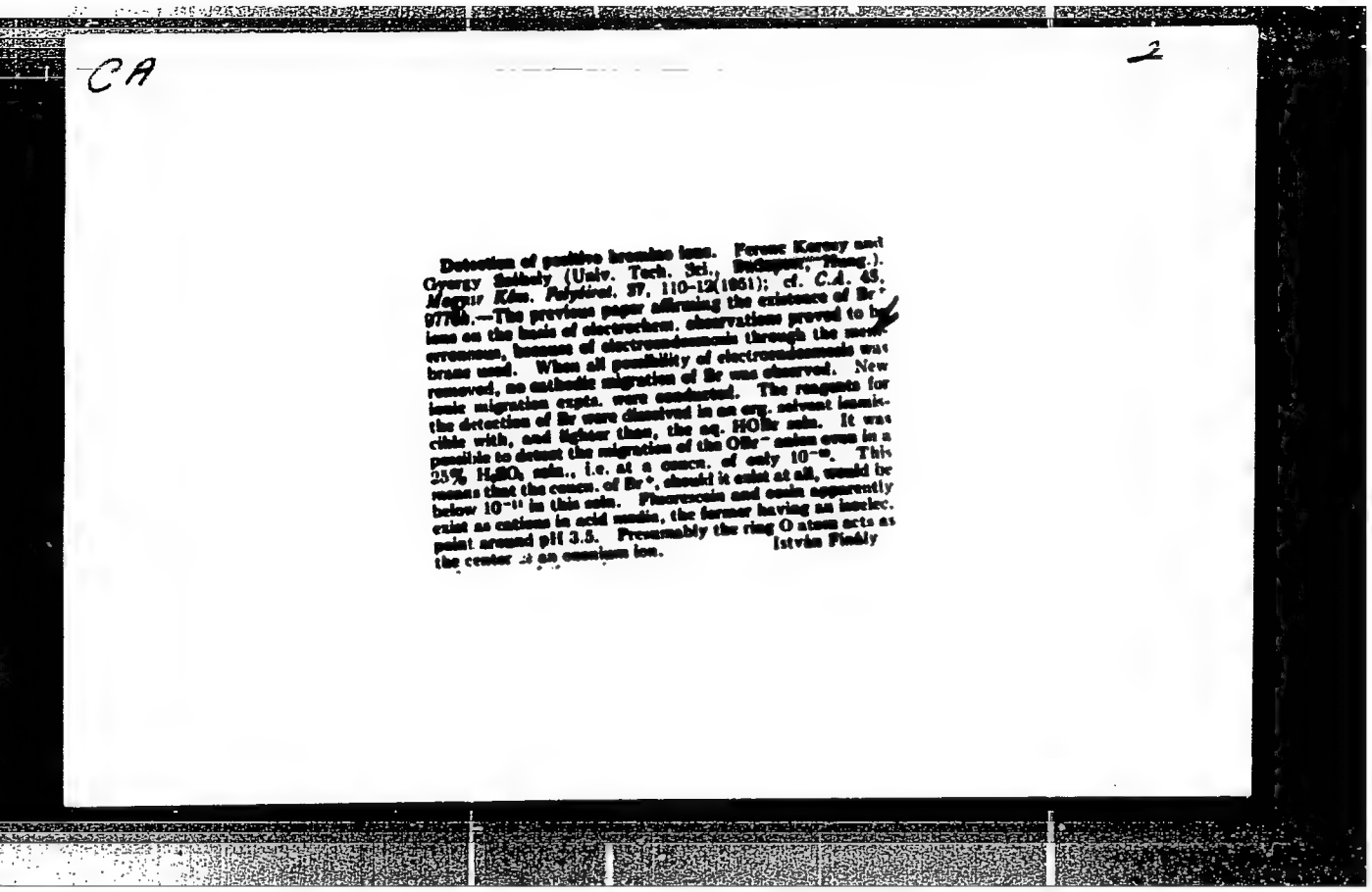
4

Volatile univalent copper and silver salts of fatty acids.
András Keller and Ferenc Kormoy. Magyar Tud. Akad. Kém. Tud. Oszt. Közlemények 3, No. 12, 83-6(1948).--See C.A. 49; 12704a.

CA

10

Preparation of acetobromo-sugars. M. Bárczai-Martos and F. Korosy (Tech. Univ., Budapest). *Nature* 168, 369(1951).—Acetobromoglucose (I) is prepd. as follows: To 400 ml. Ac_2O and 2.4 ml. $HClO_4$ (as catalyst) is added 100 g. glucose in the course of 30 min., with the temp. kept at 30–40°, then 30 g. amorphous P, the reaction flask cooled in an ice-salt bath, then 180 g. Br added gradually, with the temp. kept below 20°, followed with 90% of the stoichiometric amt. of H_2O (30 ml.) with stirring, the flask closed and left at room temp. for 1.5–2 hrs., 300 ml. $CHCl_3$ added, the mixt. poured into 800 ml. of ice H_2O, sepd. in a funnel, the $CHCl_3$ layer and occluded P sepd. by filtration, the filtered $CHCl_3$ extd. twice with an equal vol. of ice H_2O, and the H_2O extd. twice with $CHCl_3$; a final extn. with $NaHCO_3$ soln. brings the pH of the soln. to about 6. The yellow soln. is dried with $CaCl_2$, a little $NaHCO_3$, and 5 g. of active charcoal with gentle agitation, filtered after 30 min., evapd. in vacuo on a H_2O bath at 60°, and the residue dissolved in its own vol. of dry Et_2O, which on cooling yields 85% I, m. 87° after recrystn. from Et_2O. The acetobromo derivs. of galactose, arabinose, lactose, cellobiose, and maltose were prepd. in 75, 50, 85, 72, and 60% yield, resp. The sirup of bromoacetomaltose turned on addn. of ligroin into a white powder, m. 78° instead of 84°. A cryst. product from galactose is obtained by dissolving the sirup in abs. Et_2O. Rhamnose requires $TiBr_4$ for bromination and yields a sirup which does not crystallize. John R. Clopton



CA

2

Detection of positive bromine ions. Ferenc Kerney and Gyorgy Szabady (Univ. Tech. Sci., Budapest, Hung.). *Magyar Kém. Folyóirat.* 57, 110–12(1951); cf. *C.A.* 45, 9778b.—The previous paper affirming the existence of Br^+ ions on the basis of electrochem. observations proved to be erroneous, because of electroendosmosis through the membrane used. When all possibility of electroendosmosis was removed, no cathodic migration of Br was observed. New ionic migration expts. were conducted. The reagents for the detection of Br were dissolved in an org. solvent immiscible with, and lighter than, the aq. HOBr soln. It was possible to detect the migration of the OBr^- anion even in a 25% H_2SO_4 soln., i.e. at a concn. of only 10^{-3}. This means that the concn. of Br^+, should it exist at all, would be below 10^{-11} in this soln. Fluorescein and eosin apparently exist as cations in acid media, the former having an isoelec. point around pH 3.5. Presumably the ring O atom acts as the center of an oxonium ion.

Istvan Fishly

KOROSY, F.

Ionic migration at the isoelectric point. p. 101. (Magyar Kemiai Folyoirat, Budapest, Vol. 60, no. 4, Apr. 1954)

SO: Monthly list of East European Accessions (EEAL), LC Vol 4, No. 6, June 1955, Uncl

KOROSY FERENC

Category : HUNGARY/Optics - Physical Optics K-5

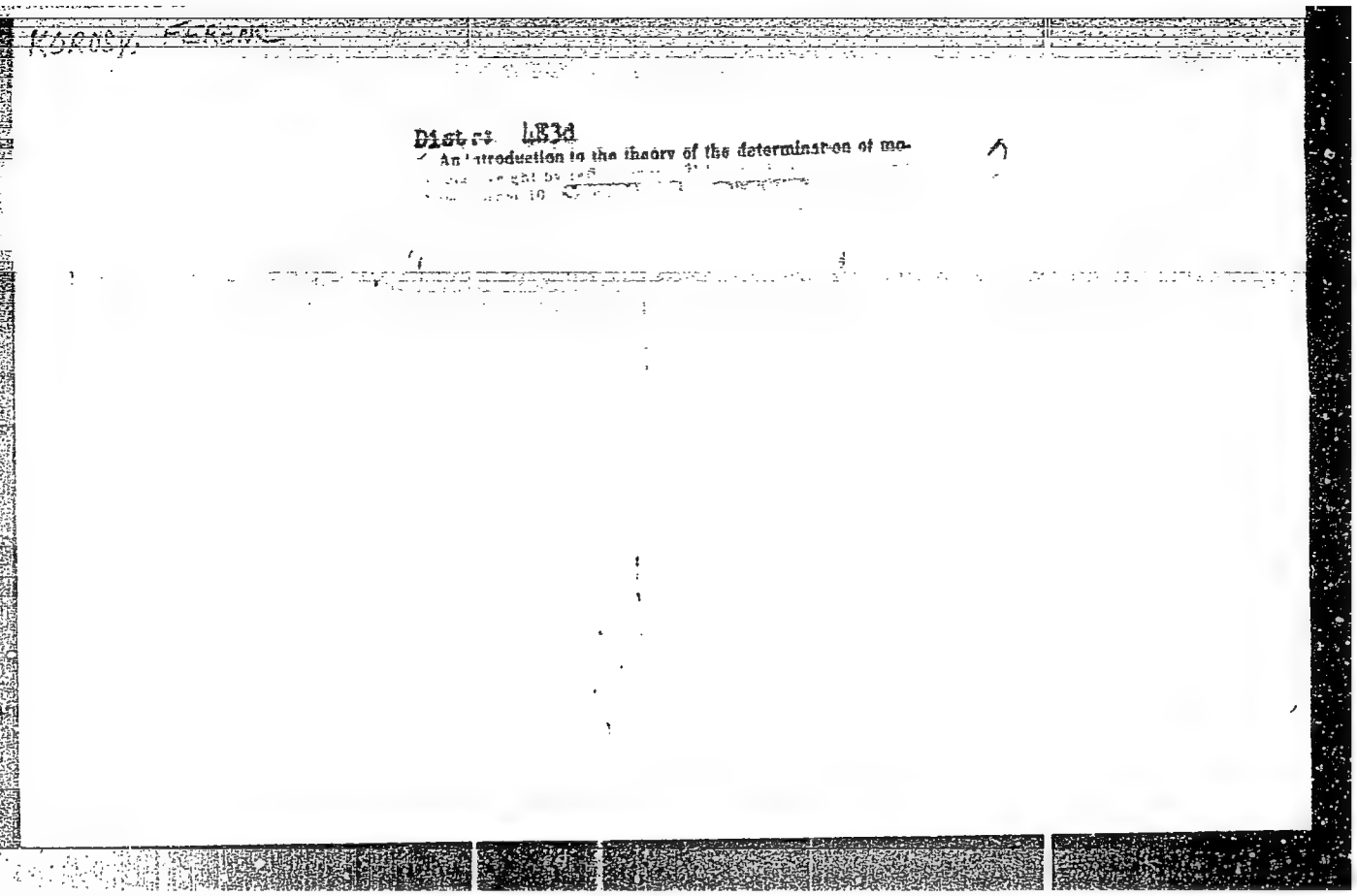
Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4948

Author : Korosy, Ferenc
Title : Determination of Molecular Weight by Using Scattered Light

Orig Pub : Magyar kemik. lapja, 1955, 10, No 2, 51-56; No 3, 84-89

Abstract : No abstract

Card : 1/1



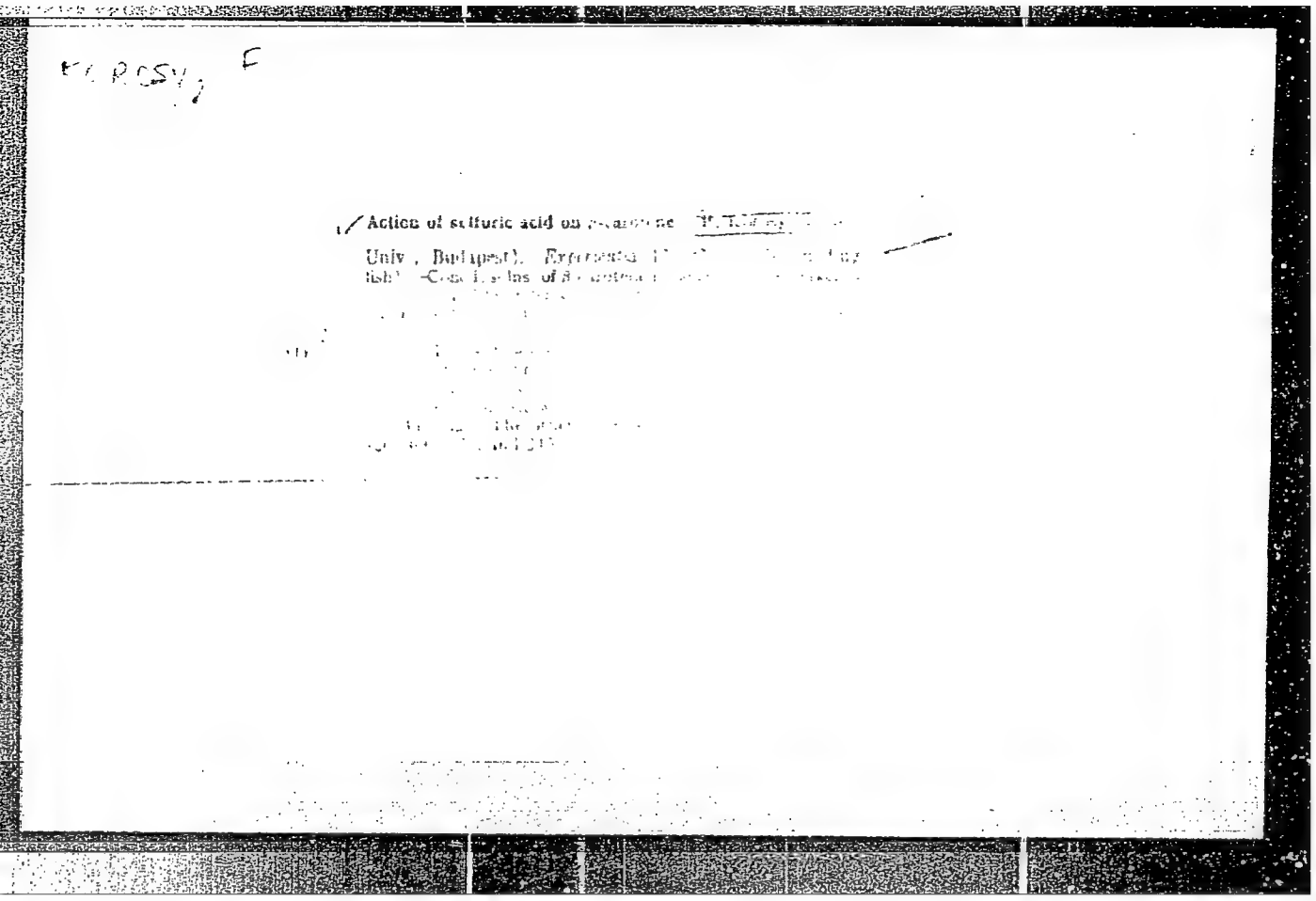
Dist.: LE3d
An introduction to the theory of the determination of mo-

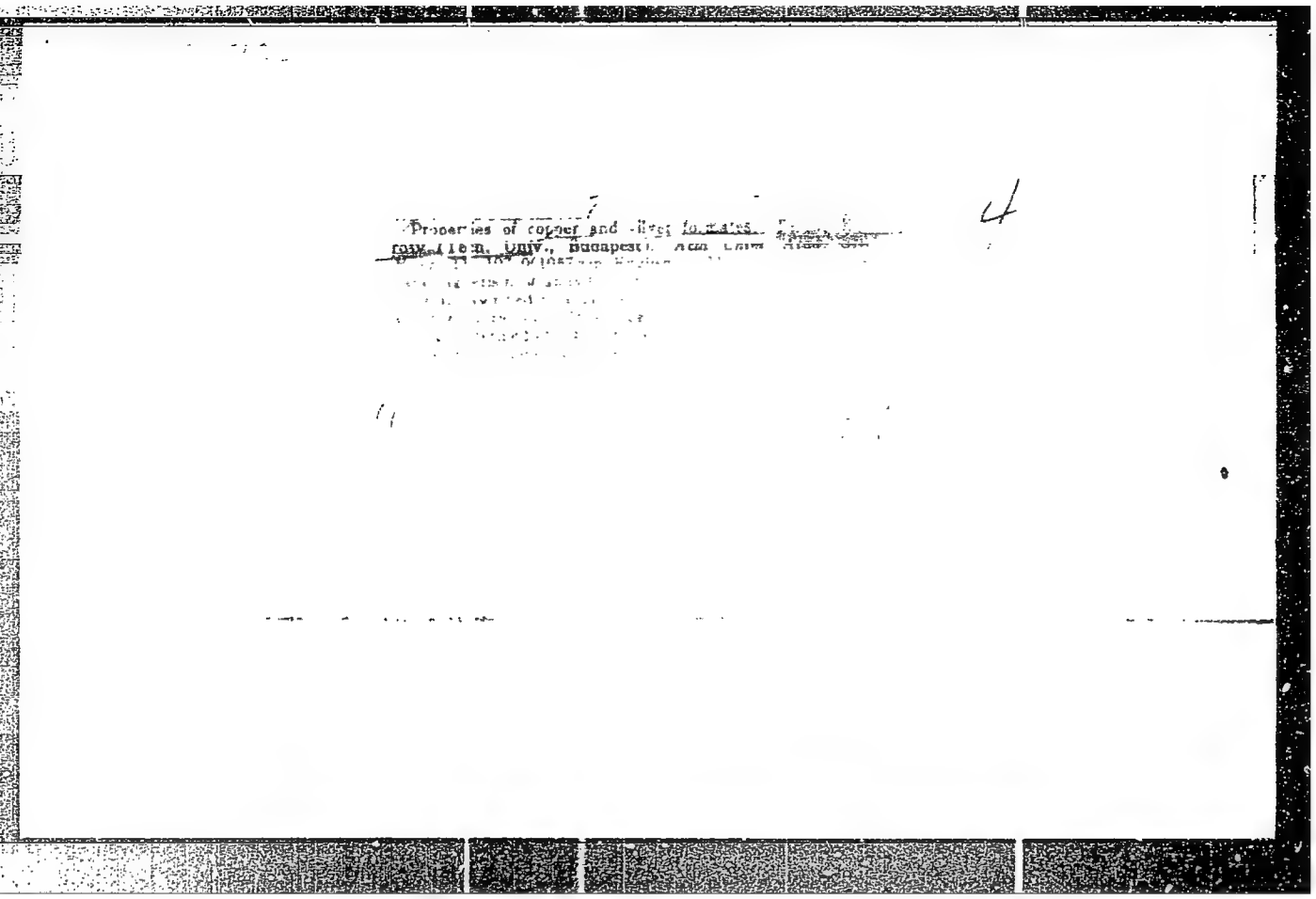
36. **Electrochemistry of carotenoids** — P. Körösy. (*Magyar Kémiai Folyóirat* — Vol. 61, 1955, No. 5, pp. 155—158, 1 fig.)

It was found that yellow-coloured carotene epoxides take on a bluish-green colour when dissolved in butyl alcohol containing sulphuric acid. The obtained coloured substance migrated in an electric field (50—90 volts) in the direction of the cathode. Other products formed during the oxidation of carotene behaved similarly. This cationic behaviour of the compounds was attributed to the formation of oxonium salt on the ring-oxygen atom. Carotenes and some of their oxidation products formed dark blue coloured substances when dissolved in 85% sulphuric acid which migrated in the direction of the anode in an electric field. No satisfactory explanation could be given for this phenomenon. The dark blue coloured sulphuric acid solutions of the carotenes was extracted with benzene. Spectrophotometric investigation of the yellow-coloured compounds thus obtained showed however that they were not identical with the carotene compounds used as starting material.

KOROSY, F.

Electrochemical behavior of β-carotene with strong acids.
F. Korosy (Tech. Univ., Budapest). [illegible] (1956)(in German), cf. C. A. 51, 5616. [illegible]
AcOH, trichloroacetic acid, [illegible]
HCOOH, glacial AcOH, [illegible]
AcOH, BuOH, H_3PO_4, [illegible]
MeOH causes β-carotene to [illegible]
Change in color is often accompanied [illegible]
of ionic migration. The [illegible]
[illegible]
original [illegible]





G

Country : HUNGARY
Category : Organic Chemistry. Natural Substances and Their Synthetic Analogs
Abs. Jour : Ref Zhur - Khim., No 5, 1959, No. 15540

Author : Korosy, F.
Institut. : Hungarian AS
Title : Blue Derivatives of Carotenoids

Orig Pub. : Acta chim. Acad. scient. hung., 1958, 15, No 1, 35-49

Abstract : The properties of blue substances (BS) which are formed by polyenes with acids or "Lewis acids," including ultraviolet spectra (curves and data are given), are discussed. Apparently, BS are not uniform and are unstable as a result of the successive interaction of the reagent with different parts of the hydrocarbon chain. BS which are formed by β-carotene (I) with $H_2SO_4 \cdot H_2O$, $HClO_4$, HCOOH, CH_3COOH, CCl_3COOH and H_3PO_4 were studied. The products of decomposi-

Card: 1/2

KOROSY, G.

MOSONYI, J.; KOROSY, G.

The effect of sympathol (p-hydroxyphenylethanol-methylamine) on carbohydrate metabolism. Acta physiol. hung. 5 no.3-4:401-405 1954.

1. Medizinisch-Chemisches und Biochemisches Institut der Bolyai-Universitat, Targu-Mures (Rumanien). (Eingegangen am 12.Juli 1953)

(CARBOHYDRATES, metab.
*eff. of synephrine in dogs)
(SYMPATHOMIMETICS, eff.
*on carbohydrate metab. in dogs)

KOROSY, Gabor, dr.; KENEDI, Istvan, dr.

Daily changes of arterial tonus in hospitalized and normal control subjects. Magy.belorv.arch. 12 no.6:179-181 D '59.

1. A Magyar Nephadsereg Egeszsegugyi Szolgalatanak kozlemenye.
(VASOMOTOR SYSTEM physiol)
(PERIODICITY)

KERESHI, Ye~~ne~~ KOROSY, Jeno

BEKE, Dénesh [Beke, Denes]; KHARSHANI, KAL'MAN [Harsanyi, Kalman]; KERESHI, YENE [Körösy, Jenő]

Structure of cotarnine derivatives. Part 3: Structure of "hydrocotarnineacetic acid". Dennes Beke, Kalman Harsanyi, and Jenő Körősy. Zhur.ob.khim. 27 no.10:2760-2767 O '57. (MIRA 11:4)

1.Budapeshtskiy politekhnicheskiy universitet.
(Cotarnine) (Chemical structure)

KOROSSY, Laszlo

What is thesize of themolecules that can be distilled? Nyes elet 15 no.6:7 '60. (KEAI 9:6)
(Molecules) (Distillation)

KOROSY, Laszlo

Lyophilization. Musz elet 15 no.8:13 Ap '60. (EEAI 9:8)
(Food)

KOROSY, L. (Budapest XI., Budafoki u.8)

Data on the behavior of synthetic vacuum oils in oil diffusion pumps. Periodica polytechn chem 5 no.1:41-51 '61.

1. Physikalisches Institut der Technischen Universitat, Budapest. Vorgelegt von Prof. Dr. P. Gombas.

KOROSY, Laszlo, okleveles vegyeszmernok

Highest achievements in vacuum engineering. Elet tud 15 no.6:179-182 7 F '60.

KOROSY, Laszlo

Vacuum pumps on the basis of the heat motion of molecules.
Musz elet 18 no.14:11 4 Jl '63.

KOROSZTELEV, V.P., okleveles mernok (Moscow)

Uniform system of analysis and planning of labor productivity at various branches of transportation. Kozl tud sz 14 no.12:525-529 D '64.

KOROTAYEV, A.

Soviet Union's economic agreements with underdeveloped countries [with English summary in supplement]. Vnesh. torg. 29 no.5:43-47 '59. (MIRA 12:6)

(Russia--Foreign economic relations)
(Underdeveloped areas)

ACC NR: AP6021435 SOURCE CODE: UR/0413/66/000/011/0036/0036

INVENTORS: Frolov, V. P.; Korotayev, A. A.

ORG: none

TITLE: Dynamoelectric converter frequency regulator. Class 21, No. 182215

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 11, 1966, 36

TOPIC TAGS: frequency control, pulse width modulation, transistorized amplifier

ABSTRACT: This Author Certificate presents a dynamoelectric converter frequency regulator containing a measuring unit made of LC units and a class D transistor amplifier. Pulse width modulation provides a comparison of the saw-tooth voltage with the reference voltage through the transistor input. To provide independent operation, a rectifier and filter forming the saw-tooth voltage are connected to the secondary winding of the choke of the LC circuit (see Fig. 1). A transformer and rectifier forming the reference voltage are connected to the supply terminals of the LC circuit.

Card 1/2

UDC: 621.316.726

SOV/137-58-10-21523

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 152 (USSR)

AUTHORS: Makogon, M. B., Panin, V. Ye., Kitayeva, L. P., Korotayev, A. D., Sukhovarov, V. F., Shcherbakova, N. I.

TITLE: The Effect of Annealing and Intermediate High-temperature Deformation on Compression Curves of Copper and its Alloys (Vliyaniye otzhiga i promezhutochnoy vysokotemperaturnoy deformatsii na krivyye szhatiya medi i yeye splavov)

PERIODICAL: Dokl. 7-y Nauchn. konferentsii, posvyashch. 40-letiyu Velikoy Oktyabr'sk. sots. revolyutsii, Nr 2. Tomsk, Tomskiy un-t, 1957, pp 59-60

ABSTRACT: The effect of plastic deformation (D) on the progress of recovery processes in Cu and its alloys with Ni (5, 10, 15 atom-%), Al (5, 10, 15 atom-%), and Zn (5 atom-%) was investigated. Mechanical properties of metal which had been subjected to deformation at room temperature were compared after the metal had been annealed as well as subjected to slight deformation under identical temperature conditions. It was established that application of stress stimulates the recovery processes; this is manifested by the fact that mechanical

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The Effect of Annealing (cont.)

properties of work-hardened specimens (S) which have been subsequently subjected to mild deformation at elevated temperatures are lower than the properties of S's which have been annealed only at identical temperatures. A drop in secondary reduction curves of S's which have been preliminarily subjected to deformation at room temperature is observed at elevated temperature. The stimulating effect of loading, which becomes greater with increasing temperatures, begins to diminish as the T_p point is approached and, finally, goes down to zero. It is shown that the D of work-hardened S at temperatures beyond the recrystallization threshold contributes to complete relief of work-hardening stress achieved at room temperature and, at the same time, produces new distortions which cannot be completely relieved during D at the given temperature. Compared with pure Cu, other conditions being equal, the intensity of recovery processes under load is lower in the Cu alloys investigated. As the concentration of Ni is increased and the concentration of Al in the Cu alloy is reduced, the intensity of recovery diminishes. In alloys with relatively small cohesive bonds (Cu-Al), the recovery processes occur more intensively than in the case of alloys in which the cohesive forces are greater (Cu-Ni).

1. Copper--Heat treatment 2. Copper alloys--Heat treatment
3. Copper--Deformation 4. Copper--Mechanical properties

V. N.

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18(6) SOV/2o-122-2-15/42

AUTHORS: Makogon, M. B., Panin, V. Ye., Sukhovarov, V. F., Abramets, L. P., Korotayev, A. D., Shcherbakova, N. A.

TITLE: On the Rôle of External Stress in the Weakening During a Plastic Deformation (O roli vneshnego napryazheniya v razuprochnenii pri plasticheskoy deformatsii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 219-221 (USSR)

ABSTRACT: It was interesting experimentally to detect a stimulating influence of external stress on the intensity of recovery immediately during the plastic deformation itself, and to investigate the influence of the nature of the material and of the deformation conditions (velocity, temperature) on the intensity of the recovery. The measurements were carried out on samples of electrolytic copper and their alloys with Ni, Al (5; 10; 15 atomic %) and with Zn (5 atomic %). All these samples (d = 11,00 ± 0.01 mm, h = 7,00 ± 0,01 mm) were deformed by compression up to 30 % at room temperature with an average velocity of 4,3 %/min. The deformations and the tempering were carried out at various temperatures. A figure

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On the Rôle of External Stress in the Weakening During a Plastic Deformation

shows the curves of the flowing for one of the investigated alloys. According to these curves, the stress weakens the samples so intensely that resistance against deformation is diminished by this deformation. If the temperature of the deformation increases, the decrease of the resistance becomes more noticeable. If other conditions are equal, this decrease is more intense for the alloys of the systems Cu-Al, Cu-Zn than for the alloys of the system Cu-Ni. The curves of the third contraction of the samples tempered after a cold deformation are always higher than the curves of samples which were deformed at the temperature of the first series of samples. The plastic deformation, therefore, caused an additional weakening. The nature of the alloy has no influence on the value of the relaxation coefficient K, if the percentage of the admixture is lower than 5 %. However, for higher percentages of admixture, this influence is well noticeable. The alloys of the system Cu-Al relaxate noticeably more intensely than the corresponding alloys of the system Cu-Ni. The results of this paper are an experimental proof of the weakening caused by the deformation and of the stimulating influence of the external stress on the intensity of this weakening.

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SOV/20-122-2-15/42

On the Rôle of External Stress in the Weakening During a Plastic Deformation

Weakening depends on the conditions of the deformation (temperature, velocity) and on the nature of the deformed alloy. There are 2 figures, 1 table, and 14 references, 12 of which are Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut pri Tomskom gosudarstvennom universitete im. V. V. Kuybysheva
(Siberian Physical-Technical Scientific Research Institute at Tomsk State University imeni V. V. Kuybyshev)

PRESENTED: May 7, 1958, by G. V. Kurdyumov, Academician

SUBMITTED: April 29, 1958

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37722

S/139/62/000/002/019/028
E073/E535

18.8100

AUTHORS: Bol'shanina, M.A. and Korotayev, A.D.

TITLE: On the temperature-speed dependence of flow stresses of NiFeMo alloys. 1

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no.2, 1962, 125-130

TEXT: The authors investigated the influence of the short-range order and of the K-state on the temperature-speed dependence of flow stresses of three nickel alloys in the annealed state. The choice of the materials was based on the consideration that domains with short-range order in alloys with a K-state will be characterized by stronger chemical bonds than domains of ordinary short-range order, which will affect considerably the mechanical properties of the alloys. The following alloys were chosen: NiFe alloy containing 81% Ni as the alloy with the short-range order; ternary Ni-Fe alloys plus 3 wt.% Mo and 3 wt.% Cr, respectively, as the alloys with a K-state. In the first of these ternary alloys the K-state is highly pronounced, whilst in the second one the K-state is much less pronounced. Furthermore, the

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electric resistance (at 20°C) of specimens, deformed by 7% at various temperatures between 20 and 600°C, was measured. The authors conclude that formation of the K-state during preliminary tempering of quenched specimens leads to an appreciable improvement of the mechanical properties in the temperature range 20 to 600°C. The formation of the K-state during deformation of quenched specimens at elevated temperatures is associated with the jump-like plastic deformation and anomalous temperature-speed dependence of the flow stresses. The temperature range of these anomalies and of the jump-like deformation coincides with the interval of intensive increase of the electric resistance of deformed specimens. There are 3 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva (Siberian Physico-Technical Institute at the Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: July 13, 1961

BOL'SHANINA, M.A.; KOROTAYEV, A.D.; NIKITINA, A.K.

Investigation of the temperature-velocity dependence of the flow strain of NiFe and NiFeCr alloys. Part 2. Izv.vys.ucheb.-zav.;fiz. 2:131-137 '62. (MIRA 15:7)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom universitete imeni Kuybysheva.
(Nickel-iron alloys) (Nickel-iron-chromium alloys)
(Strains and stresses)

37723
S/139/62/000/002/020/028
E073/E535

18.8100

AUTHORS: Bol'shanina, M.A., Korotayev, A.D. and Nikitina, A.K.

TITLE: On the temperature-speed dependence of the flow stresses of NiFe and NiFeCr. II

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no.2, 1962, 131-137

TEXT: In an earlier paper (pp.125-130 of this issue) the influence of the short-range order and the K-state on the temperature-speed dependence of flow stresses in nickel-base alloys was investigated. In this paper the same dependence was studied for the binary alloy NiFe containing 81% Ni and the ternary alloy Ni_3Fe+3% Cr. It was found that the formation of a K-state in the NiFeCr alloy does not bring about considerable strengthening as compared with the strengthening during formation of an ordinary short-range order in the alloy. Plastic deformation in the range of intensive formation of the K-state and the short-range order occurs in jumps and the nature of the deformation in jumps is identical in all cases. In the alloy NiFeMo, the deformation in jumps is accompanied by an anomalous

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temperature-speed dependence of the flow stress. In the NiFeCr alloy no speed dependence was observed, whilst in the NiFe alloy a normal dependence of the flow stress on the temperature and speed of deformation was found to exist. At the temperatures of formation of the K-state and of the short-range order, a sharp drop in the plasticity was observed. There are 4 figures and 2 tables.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva (Siberian Physico-technical Institute at the Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: July 13, 1961

45011

S/139/62/000/006/020/032
E193/E383

24.7500

AUTHOR: Korotayev, A.D.

TITLE: Investigation of the effect of plastic deformation on the kinetics of the low-temperature transformations in NiFeCr and NiFeMo alloys

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no. 6, 1962, 139 - 142

TEXT: On the basis of theoretical considerations, the effectiveness of vacancies in facilitating redistribution of atoms in plastically deformed alloys should be considerably lower than that in quenched materials. If the number of excess vacancies in a quenched alloy is large, the plastic deformation-induced decrease in the effectiveness of vacancies could bring about a decrease in the rate of diffusion processes. The object of the present investigation was to check this hypothesis by studying the effect of plastic deformation on the rate of the low-temperature transformation in Ni_2Fe + 3% Cr and Ni_2Fe + 3% Mo alloys. The test pieces, preliminarily annealed for 35 h at 1 200 °C, were quenched from 950 °C and either extended to 10% elongation

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Investigation of ....

(NiFeMo alloy) or given a 10% reduction in area by wire-drawing. They were then aged at 250, 300, 350, 400 and 450 °C, side-by-side with quenched but undeformed specimens, electrical-resistivity ρ measurements (at room temperature) being used to determine the transformation rate. Typical results are reproduced in Fig. 1, where $\Delta\rho/\rho_o$ (%) for the NiFeMo alloy, aged at 300 °C, is plotted against the ageing time (hours), curves 1 and 2 relating, respectively, to quenched and quenched plus plastically deformed specimens; it will be seen that the rate of formation of the K-state in the latter case is 2-3 times slower than in the former. It can be postulated that this effect indicates solely that the degree of K-state attainable in deformed alloys is generally lower; that such is not the case is shown by the fact that 4-h ageing at 500 °C brought about an equal increase in electrical resistivity ($\Delta\rho/\rho_o$ = 8%) in both quenched and quenched plus plastically deformed specimens. It can also be postulated that the effect observed is a specific property of the NiFeMo alloys on the grounds that the Mo atoms, much larger than the Fe and Ni atoms, can act as vacancy traps. Since, however, a similar

S/659/62/008/000/020/028
I048/I248

AUTHOR: Korotaev, A.D.

TITLE: Investigation of the effects of short-range order and the K-state on the physical and mechanical properties of some nickel alloys

SOURCE: Akademiya nauk SSSR. Institut metallurgii, Issledovaniya po zharoprochnym splavam. v.8. 1962. 137-144

TEXT: The physical and mechanical properties of the binary Ni-Fe alloy containing 81% Ni and of the ternary alloys Ni_3Fe+3% Mo and Ni_3Fe+3% Cr were studied as a function of temperature. Wire specimens 1 mm. in diameter and 50 mm. long were tempered for 2 hrs. at 950°C and allowed to cool in the furnace. The heat capacity (C_p) of the Cr-containing alloy decreased with increasing temperature from 0.11 cal.g.°C at 150°C to a minimum of 0.09 cal.g.°C at 420-430°C, and then increased to 0.15 cal.g.°C at 500°C; the minimum in the C_p-temperature curve is associated with the formation of the K-state, while the maximum at 500°C is associated with the decomposit-

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S/659/62/008/000/020/028
I048/I248

Investigation of the effect of...

ion of the K-state accompanied by magnetic transformation within the alloy. When the tempering temperature was increased to 1150°C, the minimum C_p was measured at 410°C; this shift of the temperature minimum of the C_p is attributed to the higher velocity of formation of the K-state in alloys tempered at higher temperatures. The heat effects (E) accompanying the formation of the K-state were 110, and 100 cal./g. for the NiFeMo and NiFeCr alloys respectively. An equation relating the increase in yield strength to E was derived:

$$\Delta\sigma = 48\sqrt{\frac{2E}{3Nca^3}} \quad \text{[equation 1]}$$

where N is the Avogadro number, c is the coordination number, and a is the lattice parameter. The experimental data proved the validity of this equation in the case of the NiFeMo and NiCr alloys, but not in the NiFeCr one; it is presumed that the validity of this equation confirms the authors assumption that the formation of the K-state is associated with a special type of short range order inside the short range order region of the

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S/126/62/013/003/017/023
E193/E383

18.1150

AUTHORS: Korotayev, A.D. and Nikitina, A.K.

TITLE: Effect of quenching conditions and plastic deformation on the formation of the K-state in a Ni-Fe-Mo alloy

PERIODICAL: Fizika metallov i metallovedeniye, v. 13, no. 3, 1962, 454 - 457

TEXT: The object of the present investigation was to study the part played by excess vacancies in the formation of the K-state. To this end, specimens of an alloy whose composition corresponded to Ni_3Fe + 3% Mo were quenched from various temperatures at various cooling rates, after which the temperature dependence of specific heat and electrical resistivity of the alloy were determined. In addition, the variation of these two properties was studied on specimens which, after preliminary quenching followed by plastic deformation, were isothermally heat-treated at various temperatures. The formation of the K-state in quenched specimens was indicated by a minimum on the temperature-dependence of specific heat; on increasing the quenching temperature from 950 - 1 150 °C the position of this

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Effect of quenching ....

minimum was shifted from 470 to about 420 °C. The temperature interval of maximum intensity of the formation of the K-state (as revealed by the variation in specific heat) was studied also by electrical-resistivity measurements. The results showed that the intensity of the process studied was increased several times when the concentration of vacancies in the alloy was increased by quenching it (from 950 °C) in water instead of in air. The effect of excess vacancies on the formation of the K-state was also demonstrated by the results of experiments carried out on specimens quenched and then plastically deformed. These are reproduced in Fig. 3, where the increase in electrical resistivity ($\Delta\rho/\rho$, %) os specimens isothermally heat-treated at 400 °C is plotted against the ageing time (hours), curve 1 relating to water-quenched material, curves 2-4 to material which after quenching had been given 1, 5 and 15% reduction, respectively. Finally, the existence of a close relationship between the presence of excess vacancies and formation of the K-state was indicated by the fact that tentatively determined activation energy for this process was found to be 36 ± 5 kcal/mole

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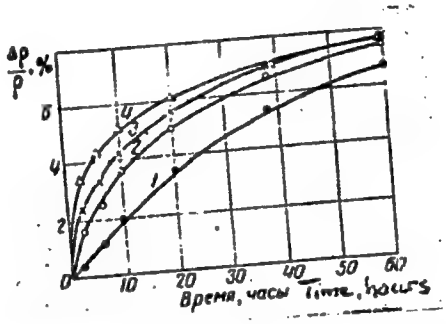
Effect of quenching ....

which was very close to the activation energy for movement of vacancies in some nickel alloys with properties similar to those of the alloy studied by the present authors.
There are 4 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut
(Siberian Physicotechnical Institute)

SUBMITTED: August 5, 1961

Fig. 3:



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L 12474-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/HW-2
S/185/63/008/003/008/009

57
56

AUTHOR: Korotayev, A. D. and Aleksandrov, N. A.

TITLE: Effect of close order on the temperature dependence of flow stress of nickel base alloys

PERIODICAL: Ukrains'kyy Fizychnyy Zhurnal, v. 8, no. 3, 1963, 376-381.

TEXT: The article investigates the effect of close order in Ni-Fe (80% Ni + 20% Fe), and also in Ni_3Fe alloys with addition of 2 atomic % of Cr or Mo. on the temperature dependence flow of stresses under tensile stresses. In all of these alloys in the course of relatively short time annealing below 500° C, short ordering occurs. It was shown that in Ni_3Fe + 2% Cr and in Ni_3Fe + 2% Mo the resistance to deformation changes nonmonotonously with change in deformation temperature. At $T > 300^\circ$ C the ordinary decrease in the flow stress is followed by an abrupt rise with maximum at $T \approx 380 - 400^\circ$ C. In the temperature anomalous region of mechanical properties the flow curves are irregular and the electrical resistance increases considerably. Preliminary deformation sharply changes the nature of temperature dependence of the mechanical properties -- there is no temperature dependent anomaly observed. The processes responsible for the increase of resistivity are

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L 12474-63

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Effect of close order...

sharply decreased. Conclusions are drawn with respect to characteristics of the deformation of alloys as well as in the effect of increase of resistivity. It is believed that this phenomena is caused by short-range order processes (K-state) in alloys. The article contains 2 figures and a 24 item bibliography.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut (Siberian Institute of Technical Physics, Tomsk.)

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L 12473-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/HW-2
S/185/63/008/003/009/009

AUTHOR: Korotayev, A. D. and Malov, Yu. V.

TITLE: Study of kinetics of formation of short-order in tempered and deformed nickel base alloys

PERIODICAL: Ukrains'kyy Fizychnyy Zhurnal, v. 8, no. 3, 1963, 381-386.

TEXT: This work gives the results of investigation of the effect of plastic deformation on the kinetics of low temperature transformation in tempered specimens of Ni_3Fe composition with addition of 2 atomic % of Mo. In the course of low temperature annealing, after tempering or plastic deformation, an increase in electrical conductivity of the investigated alloy was observed. It is associated with formation of short-order. It was possible to observe the rate of formation of the latter by observing the rate of change of electrical resistance in the course of annealing at different temperatures. Measurements were conducted with double Thomson bridge at -195° C. The accuracy of measurements was not less than ± 0.05%. It is shown that above 250° C, plastic deformation retards short order (K-state) formation in quenched samples. This effect is explained by the decrease in efficiency of the excess vacancies in the course of redistribution of atoms in alloys. Two stages were discovered

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ACCESSION NR: AT4013937 S/2659/63/010/000/0123/0130

AUTHOR: Korotayev, A. D.; Malov, Yu. V.; Aleksandrov, N. A.

TITLE: Investigation of the anomalous temperature dependence of creep stress in nickel-base alloys

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochny*m splavam, v. 10, 1963, 123-130

TOPIC TAGS: nickel alloy, nickel iron molybdenum alloy, creep stress temperature dependence, creep stress, iron containing alloy, molybdenum containing alloy

ABSTRACT: The aim of this paper was to investigate the influence of high temperature annealing in hydrogen on the temperature functions and the type of alloy deformation. The influence of preliminary deformation in these properties was also investigated. An experimental estimation of the effect of introducing Cottrell and Suzuki "atmospheres" for strengthening NiFeMo alloys was attempted. The relationships between electrical resistance, mechanical properties and deformation of alloys at various temperatures were studied. As shown by Figs. 1 and 2 in the Enclosure, annealing in hydrogen did not lead to any abnormal features at low temperatures. After considering all available information, the authors conclude that the Cottrell and Suzuki "atmospheres" should be investigated

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ACCESSION NR: AT4013937

further. The tempered samples showed the presence of the K-state. This is probably due to formation of a close order and seems to contradict the assumption of a relationship between the K-state and segregations. Orig. art. has: 4 figures.

ASSOCIATION: Institut metallurgii AN SSSR (Metallurgical Institute AN SSSR)

SUBMITTED: 00 DATE ACQ: 13Mar64 ENCL: 02

SUB CODE: ML NO REF SOV: 017 OTHER: 015

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